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The OIL WEEKLY and The COMPOSITE CATALOG
for the drilling-producing-pipeline industry

PETROLEUM REFINER and The REFINERY CATALOG
for the refining-natural gasoline industry

☆

LOOKING AHEAD
. . . with the Editor

IN NEXT week's issue will appear the first of a series of articles on electrical well logging, which will constitute the most extensive assembly of information on this subject yet published by an oil magazine.

These articles have been written to give practical data on the conventional methods of electrical logging. Despite the technical aspects of the subjects, the basic principles underlying these methods will be explained in simple terms. Special emphasis will be placed on the interpretation of the result obtained. Due to the wide scope of the subject and the space limitation, only the usual and simplest conditions have been investigated quantitatively in these articles. Qualitative data, however, have been given on the most important cases. A feature of the articles will be the explanation of principles with many schematic drawings.

The material to be presented in the articles has been under assembly for 4½ years, and the author, who ran his first electrical well log in France in 1927, has devoted 75 percent of his time during the past 6 months in preparing the series.

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Contents • July 31, 1944
Volume 114, No. 9

The Changing Panorama..... 9

Technical and Feature Articles:

Repressuring Has Its Possibilities in Oklahoma City..... 17
By ANTHONY GIBBON

How to Determine the Amount of Concrete Needed..... 20
By E. N. KEMLER

Flexibility of Underground Gas Storage Demonstrated..... 22
By W. R. KUBISTA

In Texas—Gas Laws Need Revising..... 32
By GEORGE O. IVES

Montana's Newest Discovery of Particular Significance..... 34
By EUGENE S. PERRY

Operating Hints for Drilling Crews..... 38

New Roads to Oil-Producing Areas in Peru..... 41

Truck-Tire Shortage Is Threat to Nation's Oil Production..... 46
By A. R. McTEE

News and Departments:

Looking Ahead with the Editor..... 7

Washington Roundup..... 13
By BERTRAM F. LINZ

Markets, Statistics and Prices..... 49

Pipe Line Review..... 50

United States Field Operations..... 53

United States Exploratory Completions..... 65

United States Wildcat Starts..... 66

Squeaks from the Bullwheel..... 69

Notes for the Equipment Buyer and User..... 70

Index to Advertisers..... 72

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The Changing Panorama

War Rubber Job One Well Done

ACCOMPLISHMENTS of the Office of Rubber Director are the more outstanding because of the delay and uncertainty which marked the early efforts to move into actual plant construction. It seems appropriate to admit that the early handling of affairs in rubber fell little short of scandal. Now the agency has finished its work and is ready for liquidation.

While three industries, rubber, chemistry and petroleum, deserve some credit for the accomplishment, in large measure the credit goes properly to two men—William M. Jeffers and Bradley Dewey. The former left a railroad job, read the Baruch report, accepted it as a mandate and went to work at getting plants built. In his own words he "bulled it through."

He named Dewey as assistant director to handle technical matters and gave them no further attention. When the plant construction was assured, Jeffers resigned so Dewey could continue as director. Now that phase is finished and Dewey moves out.

Knowing when a job is finished seems to be a good habit in the affairs of rubber.

Chemical rubber as an industry, however, is just started. What has been done has come about under necessity and without regard to cost. The one purpose has been rubber, which is now being made in sufficient quantity.

It is to be hoped that supervision does not return to the new industry. From here it should win on its merits. Chemical rubber has superior qualities on which it can hold position over natural rubber. Thus far it is not superior and cheaper in all uses. It is not certain that it will make the cheapest and best tire. But it does have superior position in so many other uses that it can be maintained by private industry and in competition with the plantations on the Malay peninsula.

The chemist has only started with his elastomers. With the plants that are essential to the new industry he can bring his chemical product into full competition with natural rubber. When he wins on that basis, this country will in fact have a new industry.

It is a patent actuality that both judicial doctrines and executive attitudes are now manifestly otherwise than hitherto in the government of the United States. Whether they are evolutional or revolutional, or whether they import weal or woe for the Nation, are matters that rest in individual opinion. If they ever transcend constitutional limitations or are baneful in that they are breaches of trust of power, the responsibility can be not elsewhere than upon the legislative.

—Institute for the Orderly Development of American Administrative Law.

Super-Trucks for the Postwar Period

MEMBERS of the Society of Automotive Engineers, meeting in Detroit, heard Vincent C. Young make the prediction that after the war is over the aircraft engine will be adapted for use in powering heavy-duty land vehicles of all commercial types.

He based this opinion on the coming need for transporting the greatest possible loads over the greatest possible distances at the lowest possible cost, which calls for full appreciation and application of the high efficiency, low cost of operation and long life of the plane motors now being manufactured.

Young pointed out, also, that this development will be stimulated by reason of the fact that motor fuels undoubtedly will be more heavily taxed after the war, and that aviation-type motors, using 100-octane gasoline, will be used because of their economy, high power, reliability and light weight per horsepower. Even passenger car motors will be designed to take advantage of the superior qualities of aircraft motors, since the car manufacturers, as a result of their wartime experience in building them, have learned much about what more can be done and what should not be done in designing the most efficient motor for ground vehicles.

Assuming that Young's predictions come to pass, it appears likely that we need not worry about what is to be done with our high-octane plants after the war. It might be more to the point to figure out whether the demand for this super fuel will not grow, if the aircraft motor has found a permanent place in peacetime ground vehicle transportation.

One thing to worry about, however, is the effect of such heavier vehicles on roads, unless science aids in better distribution of loads.

Oil Reserves by Companies Listed

AMONG the interesting features of a study of a group of larger oil companies made by Merrill Lynch, Pierce, Fenner & Beane, and published under the title of "Petroleum—1944," is an analysis of crude oil reserves. Total reserve in barrels as well as reserves in barrels per share of common stock are shown. It is pointed out that the information was obtained from sources believed to be reliable but without further verification or investigation by the publishers. Reserves are given as follows:

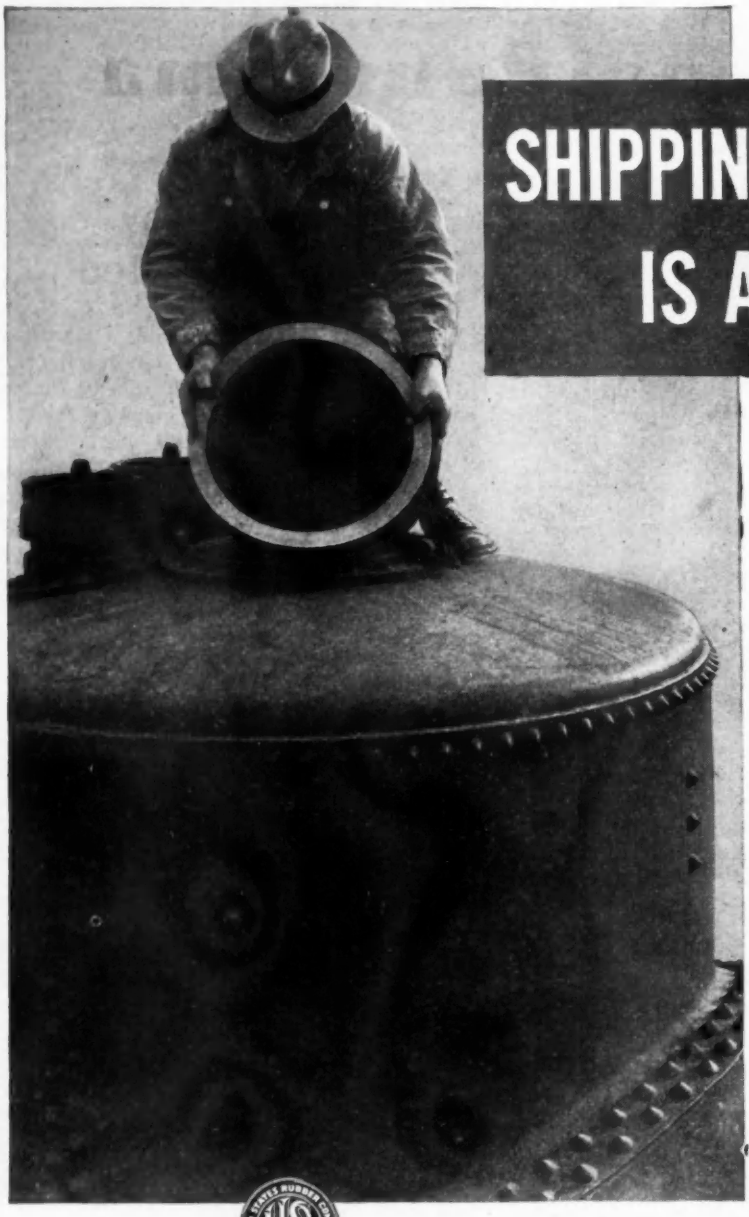
Company	(1)	(2)
Amerada Petroleum Corporation	350,000,000	444
Atlantic Refining Company	300,000,000	77
Barnsdall Oil Company	150,000,000	67
Cities Service Company	370,000,000	..
Continental Oil Company	400,000,000	84
Creole Petroleum Corporation	3,000,000,000	113
Gulf Oil Corporation	2,000,000,000	208
Humble Oil & Refining Company	2,600,000,000	139
Lion Oil Refining Company	40,000,000	67
Mid-Continent Petroleum Corporation	50,000,000	27
The Ohio Oil Company	570,000,000	83
Phillips Petroleum Company	500,000,000	80
Plymouth Oil Company	140,000,000	129
The Pure Oil Company	450,000,000	74
Richfield Oil Corporation	120,000,000	29
Seaboard Oil Company of Delaware	150,000,000	117
Shell Union Oil Corporation	900,000,000	53
Sinclair Oil Corporation	600,000,000	35
Skelly Oil Company	120,000,000	99
Socony-Vacuum Oil Company, Inc.	1,200,000,000	30
Standard Oil Company of California	1,250,000,000	90
Standard Oil Company (Indiana)	800,000,000	47
Standard Oil Company (New Jersey)	6,000,000,000	183
The Standard Oil Company (Ohio)	50,000,000	..
Sun Oil Company	509,000,000	146
The Superior Oil Company	170,000,000	330
The Texas Company	1,500,000,000	112
Texas Pacific Coal & Oil Company	50,000,000	56
Tide Water Associated Oil Company	400,000,000	36
Union Oil Company of California	351,400,000	57

(1) Total Reserves in Barrels.
(2) Reserves in Barrels per Common Share.

Widespread Study Of Diesels Planned

A GOOD omen for further expansion and application in the use of diesel engines is the announcement that 139 schools of engineering in the United States either have courses on diesels or they plan to institute them after the war. One school, Washington University of St. Louis, has $100,000,000 to spend for buildings and expansion of equipment in developing its engineering studies including diesels.

Gordon Lefebvre, chairman of the Diesel Engine Manufacturers Associa-



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tion's committee on schools, predicts a greatly increased demand for diesel engines after the war. His committee plans to aid all educational institutions that ask for help or advice in establishing or improving their courses of study pertaining to diesels.

Postwar Fate of High-Octane Plants

AMONG reconversion problems which will confront the oil industry after the war is the problem of what to do with the 100-octane gasoline plants which are today producing in excess of 400,000 barrels of aviation fuel a day.

John Day, executive manager of the Western Petroleum Refiners Association, believes that some plants will be scrapped while others will have to be re-vamped so that they can produce an economic motor fuel. In any event, the industry will have to use its ingenuity in order to save the millions spent for 100-octane gasoline plant construction.

While postwar military requirements for aviation gasoline cannot be estimated—these being governed by international factors to be settled at the peace table—civilian needs will run between 35,000 and 50,000 barrels per day, in Day's opinion.

Aviation gasoline will be used by commercial airlines, private plane owners and training centers in the proportion of 10,000 barrels a day each for airlines and private plane owners and 20,000 for training requirements.

This still leaves 350,000 barrels a day of aviation gasoline still to be absorbed. The automobile of the future will not burn 91-100 octane fuel. It would be too expensive in any case, since regular motor fuel costs an average of six cents a gallon, not including taxes, and 91-100 octane costs about 13½ cents a gallon.

Day predicts continued foreign exports of aviation gasoline immediately after the war, but not indefinitely. Reconversion or scrapping seems to be the only solution.

Industry Would Aid Agriculture

SEEKING ever-widening uses for crude oil to the end that its advantages may reach more people, Shell Oil Company, Incorporated in cooperation with Shell Development Company and Shell Chemical Division of Shell Union Oil Corporation, announces the construction of a $500,000 agricultural laboratory. The laboratory will include a 142-acre tract of land at Salida, California, for experimental uses. Research will be promoted in the fields of spray oils, fertilizers, insecticides, fungicides, soil and grain fumigants and plant hormones.

The staff will be headed by Dr. T. R. Hansberry, former associate professor of the New York State College of Agriculture, at Cornell. Other members will include outstanding men in the fields of entomology, plant pathology, plant physiology, nematology and horticulture.

Present plans call for construction of green houses, a laboratory and office building including an auditorium with motion picture equipment.

In making the announcement of the laboratory, S. Belither, chairman of the board of directors, said: "It is our sincere hope that the establishment of the Shell Agricultural Laboratory will, when the 'sword of today becomes the plowshare of tomorrow', make possible more intensive cultivation of land now in production."

Proper Incentive for Business

IN NEARLY all postwar plans, considerable stress is being placed on the necessity for providing incentives to spur private enterprise. Risk money, it is called by some; others tag it as surplus for expansion; and still others who think in terms of more formal economics speak of motivation to initiate. It all adds up to the proposition of getting something for what you do, and with the possibility of reward or profit in proportion to the risk taken and the effort expended. Upon these conditions, our nation has achieved its position today.

For a number of years the oil industry has been trying to impress the point that incentive is lacking for exploration needed to keep crude reserves growing. War brings artificial barriers and restraints that have to be considered; these often side-step economic laws which are fundamental in normal development. Without incentive, there isn't much hope of growth.

As foremost an authority as Roger Babson has said that "Increased taxes have not cut living expenses but have come wholly out of money that heretofore went into new buildings, new factories, new ships, and other investments. This is the real reason for the unemployment which preceded the war and which is bound to come again, some time after the war, unless taxes are greatly reduced."

Postwar planners then should not overlook the real problem. American business must be given the proper incentives to take up where the war forced it to leave off. The opportunity to realize a reasonable profit on investment and effort must not be stifled. On this fundamental depends all progress.

Our government which has for a number of years taken the attitude that there is something anti-social, something a little bit unseemly about wealth, especially if the other fellow has it, might consider the advice of Abraham Lincoln who thus expressed himself on property limitation:

"Property is the fruit of labor; property is desirable; is a positive good in the world. That some should be rich shows that others may become rich, and hence is just encouragement to industry and enterprise. . . . Let not him who is houseless pull down the house of another, but let him labor diligently to build one for himself, thus by example assuring that his own shall be safe from violence. . . . I 'take it that it is best for all to leave each man free to acquire property as fast as he can. Some will get wealthy. I don't believe in a law to prevent a man from getting rich; it would do more harm than good."

Medical Problem

DR. M. N. NEWQUIST, medical director, The Texas Company, sees a revamping of the economic phase of American medicine, brought about by the war. "Fifteen million war veterans entitled to free care in veterans' facilities," he says, "and the rapid extension of prepayment plans for medical and hospital care for workers and their families will not only modify the doctor's income (increase it in the lower brackets), but it will also tend toward a wider distribution of medical care."

To care for the 55,000,000 postwar industrial workers needed in this country will require the cooperation and aid of the entire medical profession, in the opinion of Dr. Newquist. "Whatever the form of postwar medical services," he adds, "we all want it to be adequate, to provide for free choice of doctor, and that the service retain that kindly, human understanding as of old."

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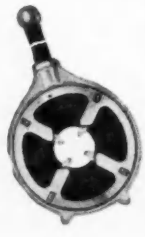

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WASHINGTON ROUNDUP

By BERTRAM F. LINZ, Washington Correspondent

ANGLO-AMERICAN discussions for a bi-lateral compact on postwar production and distribution of petroleum held the center of the stage in Washington last week, not only because they comprise the first definite effort to deal with postwar international trade problems but also because the arrangements developed with respect to oil may set the pattern for those to be sought for the handling of other troublesome commodities, with rubber the next to be taken up.

Adequate Oil for All—In process of perfection was the "memorandum of understanding" drawn up last May by technical groups representing the two governments, based on the principle of free competition and assertedly dedicated to assuring all nations an adquate supply of oil, at fair prices and without discrimination.

Rubber Agency Liquidates—Rubber also came into the limelight, with announcement by Rubber Director Bradley Dewey that, the synthetic program having been "bulled through", he would resign September 1. This will be the first liquidation of a major war agency, Dewey proposing that remaining problems of rubber goods production be handled by the War Production Board. Synthetic production currently is running at a rate of more than 800,000 tons a year and by next year will exceed 900,000 tons—enough for all requirements now foreseen. Manpower alone is the hurdle in the way of broad expansion of tire and other rubber-goods production.

California Offshore Drilling—Expansion of military operations in the Pacific and the possibility that that area soon may be the only theatre of war is centering attention on the necessity of providing additional large quantities of oil on the West Coast. Several methods of meeting the situation are under study in PAW and Deputy Administrator Davies has obtained from the California state lands commission a promise that his urgent plea for immediate broad development of offshore oil deposits will be considered at its next meeting.

Conventions Cancelled—The API convention slated for Chicago in November has been cancelled and PIWC is asking more than 100 other oil groups to take similar action as regards 1944 meetings, this in view of ODT's recent suggestions relating to non-essential travel.

Manpower Now Big Need in Rubber Industry as War Agency Liquidates

Announcing that he would resign as Rubber Director September 1 and the handling of the rubber program would revert to the War Production Board, Col. Bradley Dewey last week announced that the United States now is independent of imported rubber and the remaining problems in the manufacture of synthetic products are no greater than the war-time problems facing other industries.

Established by executive order in 1942 to carry out the recommendations of the Baruch report, the Office of Rubber Director is the first major war agency to be liquidated.

The problem now facing the rubber industry, Dewey disclosed, is that of manpower, which threatens production of heavy-duty large-size truck and bus tires, currently the most critical part of the rubber program. While materials are available to produce these tires, he said, manpower is not.

"Less than 6000 additional workers —about half the number to be strong, husky men—stand between the present shortage of tires and an ability to meet estimated requirements," he declared. "Manpower is the unsolved problem."

Dewey disclosed that during the three months ended June 30, synthetic rubbers were made at the rate of 836,000 long tons per year; in prewar years, United States imports of natural rubber ran between 550,000 and 600,000 tons.

"Care for Tires"

The production goal for passenger tires will be met, if adequate manpower and cotton tire cords are supplied—22,000,000 tires—but "the present availability of synthetic rubbers should not lull the public into false security as to the necessity of taking care of its tires," he declared.

"Until more manpower, tire cords, carbon black, etc., are in sight than is now the case, it is but prudent for the owner of every tire to take care of it and worry as to where he will obtain his next tire," he cautioned.

"The requirements of the rubber program for technically and scientifically trained men as well as certain skilled workers must continue to come before all but the most urgent and special manpower demands of the armed forces.

"In short, problems envisioned by the Baruch committee when it wrote 'if we fail to secure quickly a large new rubber supply our war effort and our domestic economy both will collapse' have been solved, but the demands of war are such that it may be many months before sufficient manufactured rubber goods, more particularly heavy-duty truck and bus tires, are available to supply the needs of the civilian economy of the United States of America —a country 'geared to rubber'."

Dewey's report disclosed that 209,004 long tons of synthetic rubbers were produced during the second quarter, 186,035 tons of which were Buna S, bringing the total output for the first half of the year to 376,087 tons but achieving an annual rate of 836,000 tons.

There is still a stockpile of over 100,000 tons of crude rubber, and an inventory of 104,000 tons of synthetics has been built up, he said.

For the current year a production of 811,000 long tons of synthetic and a supply of 118,000 tons of crude will give a total of 929,000 tons against which are seen requirements of 883,000 tons, and for the first half of 1945, synthetic production of 461,000 tons and crude supplies of 63,000 tons will give 524,000 tons against anticipated requirements of 505,000 tons. The present stockpile of 100,000 tons of crude will be maintained, but by June 30, next, it is anticipated that the synthetic stockpile will be approximately 150,000 tons.

Oil Sources Increasing

Butadiene production from alcohol will reach its peak this quarter at slightly more than 100,000 short tons, with approximately 50,000 tons from petroleum, and in the fourth quarter will be cut back to around 60,000 tons, with more than 100,000 tons from oil.

These figures reflect the diversion of butylenes to the aviation gasoline

program this month and next, made possible by the demonstrated overcapacity of the alcohol butadiene plants and the availability of alcohol, Dewey explained.

"During the fourth quarter," he said, "it is planned to curtail production of butadiene from alcohol since it is expected that the butylenes will no longer be critically needed by the aviation program and the manpower situation in the rubber goods manufacturing plants will govern the amount of synthetics that will be needed. Obviously, with the butadiene from alcohol costing about five times as much as that from butylenes, only the great need for aviation gasoline justifies any but a minimum use of butadiene from alcohol."

When full production is reached next year, output will be at the rate of 780,000 tons annually of Buna S, 55,100 tons of butyl, 67,000 tons of neoprene and 19,400 tons of Buna N, a total of 921,500 tons.

Dewey foresaw world demand for all rubber as infinitely larger after the war, especially since roads will be built through Russia, China, the Far East, South America and other areas now but little developed.

"Those roads will mean more motor vehicles and that will mean more rubber," he said.

While there will be a market for all crude from low-cost plantations, it is doubtful if new plantations will be started in the face of wage uncertainties and chemical advances which may evolve in the seven years before a crop can be harvested.

Synthetic Price Yardstick

The price of crude rubber will be determined by the price for synthetic after the war, Dewey predicted. Low-cost synthetics should sell slightly below crude at the start, but may sell for more when improved, but many producers undoubtedly can sell for 14 to 15 cents a pound and make a profit, he said.

Following the liquidation of his office, Dewey suggested the creation of a new rubber divison in the War Production Board to carry on.

"Such a division could cause Rubber Reserve Company to supply the requirements of synthetics and Rubber Reserve Company could negotiate where necessary with the Petroleum Administration for War for its requirements of raw materials from petroleum," he explained. "Debatable points could be appealed to the Director of War Mobilization.

"Research incident to the improvement of present processes for the manufacture of synthetics should be carried forward under the direction of Rubber Reserve Company in accordance with already determined and approved policies. Research pertaining to the piloting and evaluation of new synthetics should be overseen, with the aid of a consulting board, either by the rubber division of WPB or the Rubber Reserve Company. Objects of such research have been clearly defined and organizations and policies therefore well set and functioning.

"Under such a set-up new provisions governing conversions from the use of crude to synthetics and vice versa during the first months after more crude rubber is available would be governed by this rubber division of the WPB which would presumably utilize the services of men who know the problems and continue to operate with the help and advice of rubber industry technical committees."

Small Business and Patent Angles Enter Into Postwar Surplus Talk

Estimating that the government, at the close of the war, will hold petroleum products to the value of $2,160,000,000, the Senate committee on small business on July 27 urged that small business be given an opportunity to participate fully in the disposition of surplus property but warned that in some instances, as in the case of high-octane and synthetic-rubber plants, problems of patent and other rights will be involved which will require careful study.

This situation is one of a number discussed in a preliminary report of the surplus war property subcommittee headed by Senator Tom Stewart of Tennessee, which suggests that small business interests be given representation on industry advisory committees which will assist the government in the orderly disposition of war surpluses.

To Consult Congress

The subcommittee emphasized the necessity of avoiding "monopolistic aggrandizement and its attendant trade restraints and restrictions" in disposing of war plants, and recommended adoption of a suggestion by Attorney General Francis Biddle that the Department of Justice pass on sales of property that originally cost $5,000,000 or more, although believing this will be insufficient as an anti-monopolistic guide in industries where government holdings are exceptionally large. In such cases, it was held, plans for disposition should be submitted to Congress for its decision.

The report was particularly critical of the government's practice of granting options to purchase to contractors who operate its plants, commenting on the fact that no standard option has been set up and that many of the options have been given to corporations which already dominate their industries.

"The attorney general has testified that some of these options may be void as against public policy, citing illustratively a clause prohibiting the use of the plant for any commercial purpose for a period of 20 years," it was pointed out. "Many of the options now outstanding are held by corporations which dominate their industries by virtue of their vast holdings. Congress should be slow to allow further aggrandizement of such corporations by permitting the honoring of options which are of questionable legality or whose price and other terms are not strictly complied with. In many cases, regardless of option, a contractor who is now operating a government plant will be the likeliest purchaser, but there does not seem to be any reason for fortifying his position as against other prospective purchasers through the honoring of dubious option claims."

In some fields, the subcommittee continued, it will be necessary to take cognizance of the patent situation in disposing of plants.

Patent Complications

"Many of the plants, for example high-octane and synthetic-rubber plants, can be disposed of economically only to companies which have access to the patented technological processes of the industry," it said. "In order to widen the base of ownership in such industries, it would be necessary to provide for the licensing of such patents to prospective purchasers of government plants. The license could be limited to run with the plant. Any specific proposal in this field would have to wait upon the completion of studies on the subject in congressional committees and the executive agencies, including, particularly, studies of the disposition of industrial processes and patents developed at government expense in privatelny-owned plants and those held by the Alien Property Custodian."

In a report on surplus property turned over to it by other agencies, the Reconstruction Finance Corporation on July 26 disclosed that it held crude oil, coal and related crude hydrocarbons valued at $62,810 and petroleum and coal products, except raw materials for chemical industries, to the amount of $19,067.

Up to July 15, it was stated, property costing the government $72,337,730 had been declared surplus by various agencies, $66,000,000 being in the form of airplanes and equipment. In addition, RFC had surplus property of its own to the amount of $109,104,937. Of the total of $181,442,667, property costing the government $59,004,006 already has been disposed of for $52,562,554.

Two Standard Companies To Merge on January 1

Standard Oil Company of Louisiana and Standard Oil Company of New Jersey, domestic operating subsidiary of Standard Oil Company (New Jersey) will consolidate into one corporation at the end of 1944.

No material change is contemplated in the organization at Baton Rouge, Louisiana, according to M. J. Rathbone, president of Standard Oil Company of New Jersey of which Standard of Louisiana is a wholly-owned subsidiary. Rathbone, for many years president of the Louisiana company will head the consolidation. M. W. Boyer, Louisiana company executive vice president, will become vice president of the new company and will continue to exercise present management responsibilities at Baton Rouge.

Contract Soon to Be Let For Colorado-Wyoming Line

Contract will be let sometime next month for the laying of 111 miles of 6-inch pipeline from Iles, Colorado, north to Wamsutter, Wyoming, by the Stanolind Pipe Line Company, which is acting for the Utah Oil Refining Company. In addition to the 6-inch north from Craig, Colorado, to Wamsutter, the 111 miles includes 19 miles of 6-inch which will replace the 19 miles of 4-inch from Iles to Craig. The connection to The Texas Company's 4-inch line will be at Iles, close to the Wilson Creek pool.

Early Agreement Expected from Oil Conversations by Anglo-Americans

Negotiations between British and United States officials for an agreement with respect to postwar development and exploitation of world oil resources opened July 25 following several days in which the two groups met separately for discussion of their programs.

Following what was little more than a get-together meeting of the two groups, headed, respectively, by Secretary of State Hull and Lord Beaverbrook, Lord Privy Seal, sessions were suspended in order to afford opportunity for a joint subcommittee, led by Charles B. Rayner, State Department adviser on petroleum policy, and Ralph Assheton, financial secretary to the British Treasury, to consider changes proposed to be made in the principles of agreement drawn up at last spring's technical meetings.

It was disclosed that some amendments had been offered by the British delegation which, however, it was said, would not imperil the understandings previously reached, while the American group suggested one or two changes of a minor nature.

Agreement Expected Soon

Official opinion was that little time would be required for the two groups to reach an accord, and it was indicated that the agreement would be based on the results of the technical meetings. It is expected that the conversations will conclude this week with the development of a bi-lateral agreement which later may be extended to take in Venezuela, the Netherlands, Russia and other nations having direct oil interests.

The exact form which the Anglo-American arrangements would take—whether an executive agreement or a treaty—had not been determined last week, but it was indicated that whatever is accomplished will be submitted to Congress although the British delegation has authority to bind its government without referring the matter to Parliament.

The special Senate committee investigating the world oil situation has been kept apprised of developments and will be quickly informed of whatever comes out of the conversations, and in England Anthony Eden has promised to advise Parliament of the situation, although that body has no authority to intervene in the government's international arrangements.

During the week it was made clear that whatever agreements are entered into, they will not affect the operations of the domestic oil industry and will not call for a division of foreign markets between the participating nations or for the setting up of quotas for the various buying countries.

Voluntary cooperation of oil companies engaged in foreign operations, however, was seen as a prerequisite to the success of the arrangements which the conversations are developing.

No Oil Men at First

Initial discussions of the cabinet groups were conducted without assistance of representatives of the industry, and it was disclosed that it is not intended to call on the group which participated in the technical discussions unless new points arise on which their advice is desired. Work of the technical groups has been so thorough and reached such a close agreement that the present meetings will do little more than add a few refinements and approve the memorandum of understanding which was prepared last May, it was indicated.

That memorandum was based on the assumption that there will be an expansion in world oil markets after the war and that there will be ample supplies, both available and potential, to meet all demands. On that assumption, the British nationals and American nationals who have concessions abroad of large proportions, from which oil moves in international trade, have a mutuality of interest in seeing that oil shall move into world markets in ample supply at fair prices and on a non-discriminatory basis.

These distribution principles are to be based on other principles calling for the development of world resources with a view toward sound economic advancement of the producing countries, equal opportunity to the nationals of both countries in seeking new concessions and handling their concessions so as to lead to orderly development.

Machinery by which these objectives are attained is to be placed in a joint petroleum commission to be set up by the United States and the United Kingdom, designed to handle problems in the light of operations. Later, if other countries are brought into the arrangement, the commission set-up would be revised to give them representation.

Such problems as might arise in actual postwar operations would be thrashed out in the commission, which would make rceommendations to the two governments. If the governments accepted such recommendations, the industry would be asked to conform voluntarily to the commission's suggestions. The commission would have no executive powers of its own but would serve purely in an advisory capacity. No indications have been forthcoming as to what a government might do if its industry rejected its recommendations.

Sanctions Possible

Of itself, the projected petroleum agreement would carry no provision for sanctions against aggressor nations, but it has been pointed out that if the democratic governments at any time found it necessary to impose sanctions the oil-treaty signatories might well be expected to act as a unit to cut off the supply of oil from the offending country.

It has been stressed in unofficial discussions that whatever arrangements are reached will be in the nature of a compact and the direct antithesis of a cartel. Primarily, the agreement will make no provision for allocation of world markets, quotas or price maintenance, generally the basis of cartel arrangements, and the basic principles will call for free enterprise and free competition on the part of both countries.

With a view to their later participation in the oil compact, other governments are being advised of the progress of the negotiations and, at its conclusion, will receive a full report on the conference.

However, it has been indicated, some time will elapse before the bi-lateral agreement with England is made multilatral to include other countries, since it will take some time to develop a plan for calling other countries in.

Results of the present conference will be of an importance broader than the subject with which they deal, for the oil agreement may set the pattern for similar arrangements with respect to other major commodities entering into world trade in which serious problems of supply and distribution will arise after the war.

Gas Technology Institute Names Associate Director

The Institute of Gas Technology at Illinois Institute of Technology, Chicago, has announced that Leon J. Willien has been appointed associate director of the Institute. He has been associated with the Public Utility Engineering and Service Corporation of Chicago, since 1937, as a gas engineer and at present is head consultant on manufactured gas for the War Production Board.

Leon J. Willien

Recipient of the American Gas Association's two top awards, Willien received the Beal medal for the most valuable technical paper read before the association's technical section at the 1927 convention. The paper was on "Developments in Water Gas Operation." Nine years later, in 1936, he received the Charles A. Monroe Award from the association for his contributions to the manufacture, mixing and transmission of gas.

He is a member of numerous other associations and honorary societies. He attended Rose Polytechnic Institute and graduated with a bachelor's degree in chemistry. Later he also received the degree of master in chemistry, and a chemical engineering degree.

Annual API Convention Deferred at ODT Request

On July 27, President William R. Boyd, Jr., announced that the American Petroleum Institute will defer indefinitely its twenty-fifth annual meeting, scheduled to be held in Chicago November 13-16, at which an attendance of more than 3000 was anticipated.

Boyd disclosed that the PIWC has asked all 108 of the industry association of national and statewide scope to give serious consideration to the ODT request for the calling off of all 1944 conventions.

ODT Director Johnson commended both the API and PIWC for their "additional proof of the petroleum industry's great contribution to the solution of the wartime transportation problem".

RFC to Offer for Sale Soon Former Oklahoma Navy Field

The Moore, Oklahoma, air field, purchased by the Navy for $46,431 but never used because surrounding oil development made it too dangerous for aviation, has been turned over to the Reconstruction Finance Corporation by the Navy Department for disposition as surplus property.

The 532-acre tract, for which the Navy was offered $750,000 in cash and royalties by an oil company, will be offered in the near future by the RFC.

Following its acquisition in 1942, the Navy spent $150,000 in improving the field, located near Norman, Oklahoma, but oil was discovered on surrounding land before the field was completed, and the Navy abandoned the project because of danger to aviation trainees offered by the many derricks in the vicinity.

Restrictions Relaxed on Materials for Refining

Extension to refining and transportation operations of the relaxation of restrictions on the use of materials was provided by PAW July 27 by amendment of PAO 15.

Automatic authorization is now granted for use of materials for the construction, installation or extension of any operation directly incident to refining or transportation to a maximum material cost for any one complete operation not exceeding $10,000, as against the former maximum of $5,000.

Provisions of the order permitting the use of up to $500 worth of material for any purpose, even if it originally had been obtained for maintenance and repair purposes, were revoked in favor of provisions of the recently-amended WPB order P-98-B under which an operator may automatically obtain an AA-1 priority rating for material costing up to $500, which may be used for any purpose.

Louisiana Hearing Is Called for August 15

A state wide hearing will be held in the Monteleone Hotel, New Orleans, Tuesday, August 15, at 10 a.m., for the purpose of taking evidence relative to market demand from producers and purchasers of crude petroleum and natural gas preparatory to setting oil and gas well and field allowables for September and October.

All purchasers of crude petroleum and natural gas should present evidence at the hearing, or file notarized briefs by registered mail with their nominations, in triplicate before August 12, 1944.

Gavin and Detwiler Named PAW Assistant Directors

Appointment of M. J. Gavin and J. G. Detwiler as assistant directors of the foreign refining division was announced July 27 by PAW.

Gavin, who was district manager of the Foster Wheeler Corporation, Los Angeles, when he joined PAW in October, 1942, as a foreign petroleum specialist, will be responsible for the facilities side of the division. He has had 29 years' experience in the industry, starting out in 1915 as an assistant chemist for the Union Oil Company of California. From 1918 until 1929 he was on the staff of the Bureau of Mines.

Detwiler, who joined The Texas Company in 1911 as a work chemist, and rose to supervisor of tests and specifications in its refining division, joined PAW last February as a petroleum technologist. He served 19 months in the Army in the last war, and in 1926 was called in as a petroleum expert by the British Oil Company to testify before the King's High Bench Court in London.

He will devote himself largely to the operations of foreign refineries.

Tank Cars Diverted From Asphalt In Order to Haul Gulf Coast Crude

Immediate diversion of 2000 tank cars from civilian asphalt service to the hauling of Texas Gulf Coast crude to Midwestern and Atlantic seaboard refineries was approved by ODT at the request of PAW July 27.

As a result, state road officials were advised that asphalt deliveries would be reduced and were urged to use their supplies on those roads most in need of repair.

Warning that other far-reaching action may be necessary as a result of new situations, Deputy Administrator Davies said "The sudden shifting of asphalt tank cars to military service is only one of a series of similar measures taken during the last several weeks to meet the sudden spurt in military requirements for petroleum products.

"If military action in the European theatre continues at the present or at an accelerated pace, war requirements may mount even higher, in which case further inroads into civilian transportation facilities as well as civilian supply may have to be made."

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED July 29	July 22
Alabama	100	100
Arkansas	80,500	80,700
California	854,500	856,600
Colorado	8,900	8,550
Florida	50	50
Illinois	208,200	207,000
Indiana	12,750	12,900
Kansas	279,200	285,300
Kentucky	23,150	24,350
Louisiana	359,800	360,000
North Louisiana	72,800	73,000
South Louisiana	287,000	287,000
Michigan	49,700	50,300
Mississippi	45,100	44,900
Missouri	100	100
Montana	21,450	23,600
Nebraska	1,000	1,000
New Mexico	108,600	108,300
New York	12,750	13,000
Ohio	7,750	6,500
Oklahoma	339,500	341,200
Pennsylvania	34,400	38,400
Tennessee	35	35
Texas	2,065,000	2,065,000
Upper Gulf Coast	531,400	531,400
East Texas Field	363,650	363,650
Rest of East Texas	148,000	148,000
Lower Gulf Coast	216,800	216,800
Southwest Texas	78,600	78,600
South Central Texas	21,000	21,000
West Texas	463,050	463,050
North Texas	151,500	151,500
Panhandle	91,000	91,000
West Virginia	8,500	9,200
Wyoming	87,850	87,350
Total United States	4,608,885	4,624,485

Demand 61,800 Barrels in Excess of August Figure

August market demand will require the production of 4,716,100 barrels of crude oil daily, 61,800 barrels more than the 4,654,300 barrels daily certified for the month by PAW, it was announced last week by the Bureau of Mines.

Estimating that production during the second quarter ran 14 percent and runs to stills 20 percent above the same period last year, the bureau forecast further moderate gains in output and a substantial increase in crude runs during the current quarter, with the available supply of crude augmented by increasing imports and heavy withdrawals from stocks. Motor fuel demand, 16 percent ahead of last year in the second quarter, also will increase and is expected to exceed the 1943 third quarter by about 17 percent.

New York and Pennsylvania Pipe-Line Work Authorized

Applications of the Manufacturers Light and Heat Company, Manufacturers Gas Company, United Fuel Gas Company and Home Gas Company for facilities to meet requirements in the northern Pennsylvania and western New York area were granted by the Federal Power Commission.

Estimated to cost $1,927,000, the facilities authorized will consist principally of construction of main line loops, relocation and installation of gas compressor units, dehydration plant additions and enlargements, and the acquisition by Home of approximately 10 miles of 6-inch line from the Producers Gas Company at Olean, N. Y.

Manpower Utilization Is Sought by New Committee

War Manpower Commission has announced creation of Industry Associations Committees in an effort to intensify the search for ways and means of conserving and fully utilizing manpower to meet critical shortages.

The petroleum and mining industry committee is headed by William A. Ogg, of Huntington, West Virginia, former president of American Zinc, Lead and Smelting Company. The job of the committee, Paul V. McNutt, chairman of the War Manpower Commission, explained, "will be to encourage specific industries and industrial groups to cooperate in the exchange of applied new discoveries, ideas and methods that have resulted in a reduction of manpower requirements. The committee will also be responsible for

■ CONTINUED ON PAGE 44

Engineering controversy should be easily solved if diverse interests of field can adopt common objective. Prompt action is needed to meet a problem of steep decline in production from the Wilcox

Repressuring Has Its Possibilities in Oklahoma City

By ANTHONY GIBBON, Staff Writer

PRODUCING petroleum from subsurface deposits through the application of ingenuity and resourcefulness has undergone such improvement as to make petroleum production practices one of the outstanding contributions of American industry. Increased technical knowledge and its application has not only led to greater conservation of petroleum resources but has brought about the ultimate in the economic use and exploitation of the nation's oil reserves.

One measure of the success has been substantial improvement in the percentage recovery of petroleum initially in place in subsurface reservoirs. The increase in the percentage recovery has been accomplished through better and more intelligent control of the primary natural forces as well as through processes of secondary recovery. A secondary recovery operation is one that involves the application of energy of production from sources other than the original reservoir. This is accomplished by the injection of gas or of water into the producing formation to augment or replenish the supply of natural energy. Application of successful secondary recovery operations has led the industry to regard every pool, except those endowed with sufficient natural water drive, to be normally subject to a secondary recovery operation after the primary forces have spent themselves.

Own Supply Needed

Much attention has been given recently to the threatened shortage of petroleum in the United States. It was serious enough in view of the ever-increasing demand by America's industrial progress and standard of living, but becomes even more grave as allied armed forces call for more and more oil and its products to carry on the worldwide miltary effort. Secondary recovery of petroleum therefore assumes a status of considerable importance. The United States is required to look to secondary recovery operations as one of the necessary means of sustaining the productivity of petroleum reservoirs. If this is not done, America must search for and rely upon foreign sources of crude oil. Few will agree that the nation should pursue any course that would place us unnecessarily in a position of being dependent upon foreign sources of crude oil.

Many large oil fields in the United States, now exhausted of their natural forces for production, stand near abandonment with many millions of barrels of oil remaining underground. Such remaining unrecovered "recoverable" oil is the secondary-oil reserve of these fields. It is against all economic precedent to permit the nation to lose this resource. National attention has been directed to the existing situation by a number of agencies, particularly by the Petroleum Administrator for War, as well as by many agencies of the petroleum industry.

One Extreme to Another

A good example of the situation that confronts the nation is afforded by the Oklahoma City Wilcox Pool lying partly within the limits of Oklahoma City, Oklahoma. This pool was discovered on March 26, 1930, by the drilling of the Mary Sudik well and in the days of its high productivity was all the more important since it was discovered at the time when the great East Texas and other large pools ended America's crude oil shortage scare in the late 1920's. It helped to carry the nation into a period of over-supply and abundance of crude oil. Now the cycle of crude oil reservoir discoveries turns to the other extreme of critical shortage. This once prolific field is nearly exhausted of its natural energy. It approaches the state of abandonment. Is the oil remaining to secondary recovery operations to be lost without some effort to win from this field a reasonable portion of this residual reservoir oil?

To January 1, 1944, a total of 888 wells had been drilled approximately 6600 feet in the Oklahoma City Wilcox pool. As of that date, only 453 wells remained on production. From a peak annual recovery of 50 million barrels in 1935, production from the reservoir has declined to less than 15 million barrels per year. Until 1940, the pool was restricted in production by proration during the period of national over-supply. The history of the pool's production is shown in Figure 1. Figure 2 shows the monthly production since January 1,

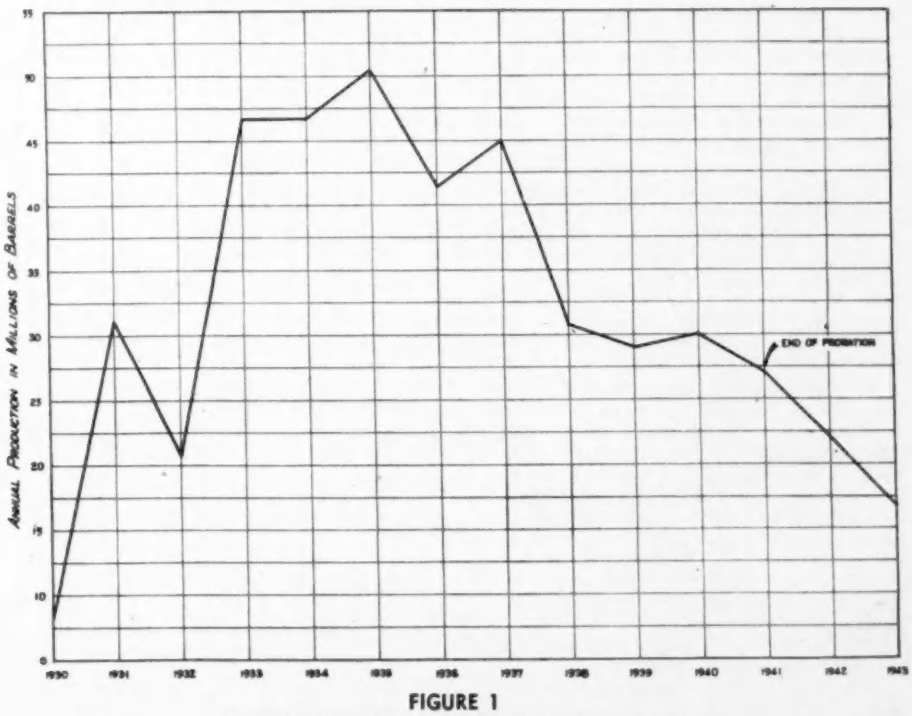


FIGURE 1
Annual production of Oklahoma City Wilcox pool

FIGURE 2

Oklahoma City Wilcox pool. Monthly production showing decline since 1940

1940, when the nation's demand for crude oil required lifting restrictions on production. This demonstrates the rapid rate of decline of crude oil production being experienced. The total volume of crude oil recovered from the Oklahoma City Wilcox pool to January 1, 1944, was 446 million barrels. Future recovery, if present methods of producing by means of the now-feeble natural forces are followed has been estimated at 76 million barrels. The total expected recovery to the economic limit, operating with only natural forces is, therefore, 522 million barrels of oil.

Only Half Recovered

Most experts who have studied the Oklahoma City Wilcox pool agree that there was initially present in the reservoir about 1150 million barrels of pipe-line oil. At the end of the primary and natural life of the reservoir there will remain unrecovered about 628 million barrels. Of the original deposit there will therefore be recovered about 45 percent.

Such a percentage recovery is somewhat higher than the industry usually obtains from natural forces in the absence of an effective water drive, such recoveries usually ranging between 20 and 35 percent. The higher recovery from the Oklahoma City Wilcox pool simply reflects the exceptional productive quality of the reservoir involved.

In these critical times, the nation cannot afford to see this field abandoned without some effort made to recover a substantial part of the estimated 55 percent remaining in the pool. Engineers are generally agreed that gas injection to restore energy to this reservoir or water injection for the same purpose could do the job. Arguments are centered more on differences of opinion as to the effectiveness of secondary recovery methods rather than on any doubt as to the ultimate economic success of a secondary operation.

The engineering controversy over the degree of success to be associated with estimates of the secondary recovery possibilities of the pool appears to be more a battle of words than a discussion of a real problem. An outside observer wonders what it is that causes the Oklahoma City Wilcox pool to be regarded as an exception as a secondary-recovery field. Gas injection or water flooding of fields not already subjected to natural water-drives has invariably increased ultimate recovery of oil except in those few instances where modern engineering can readily establish reasons for the few failures. It is difficult to understand why gas injection or water flooding so universally applied to other reservoirs in recent years cannot be applied with equal success in the Oklahoma City Wilcox pool.

Gas Injection Program

The situation suggests that if the secondary recovery problem were reduced to simply an engineering problem and other contributing and conflicting considerations were removed it would be easily possible to resolve the engineering controversy. In that event the Oklahoma City Wilcox pool could be made to yield an estimated additional 400 million barrels of oil.

Some operators in the Oklahoma City Wilcox pool are carrying on a successful gas-injection secondary-recovery program in the extreme south end of the Wilcox zone embracing parts of Sections 26, 27, 35 and 35, Township 11N-3W, and Section 31-11N-2W. A total of 58 wells is producing within the gas-injection area and the excellent results are shown in Figure 3. The dotted curve in Figure 3 represents the estimated rate of monthly production based upon the normal primary decline of the reservoir. The difference in production between that estimated curve and the actual production curve reflects the substantially increased recovery operators in that area, as well as the state and royalty interest owners, are obtaining from the gas injection program. What the operators are doing in this small part of the field should be possible in the remaining part of the pool.

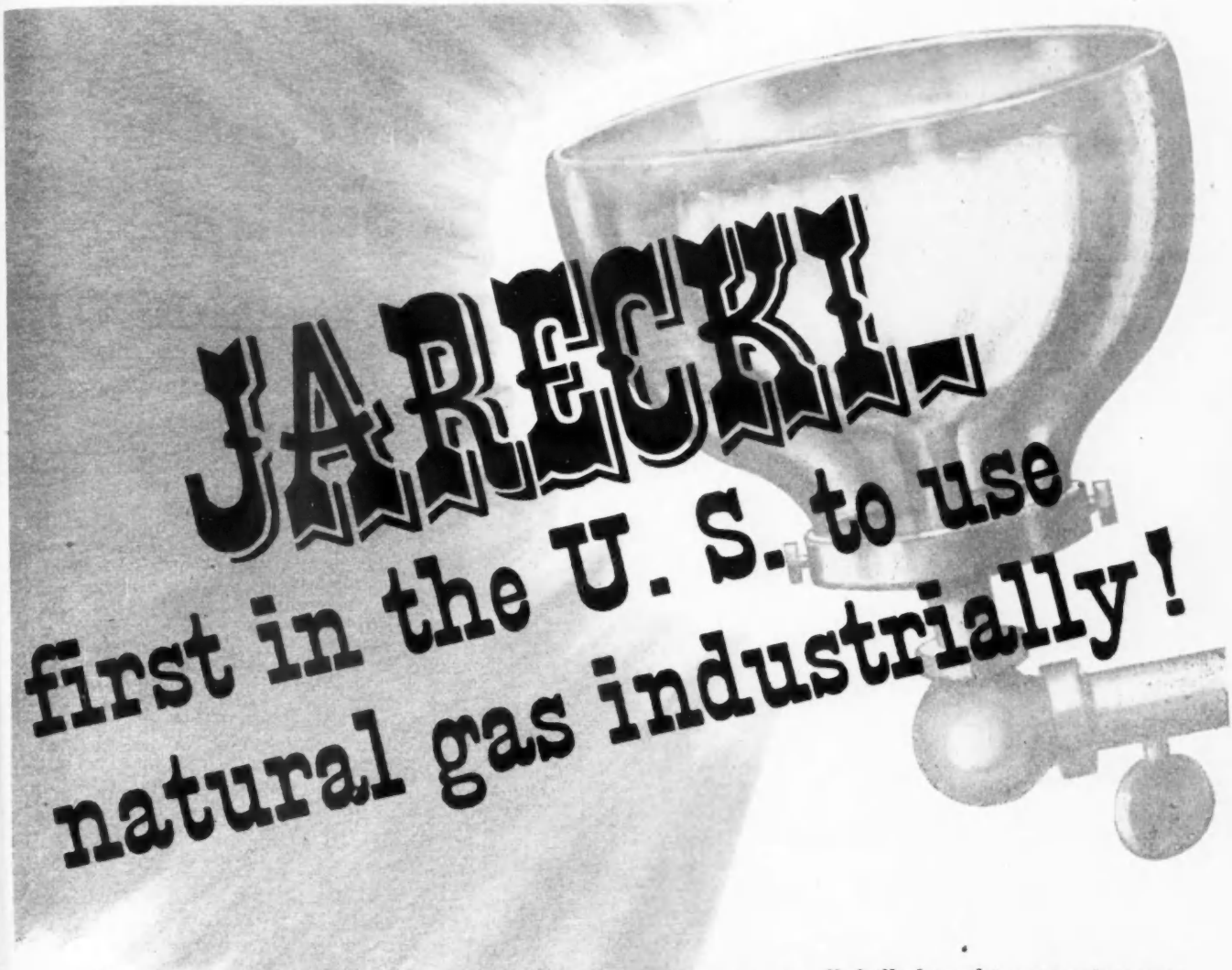
Gasoline Plant Angle

A minority of owners in the Oklahoma City Wilcox pool are reported opposed to gas-injection secondary-recovery operations in a mistaken belief that natural gasoline plants, built in the field during its flush period for the purpose of extracting gasoline fractions from reservoir gas, would profit unduly. The merit of this contention is open to question. Gas-injection operations of the type that would be engaged in the Oklahoma City pool do not lead to any unusual or disproportionate increase in the recovery of natural gasoline. Study would reveal that the gasoline plants available to the services of the oil operators represent a substantial investment in facilities that can be turned to the profitable service of oil producers.

The diversity of ownership in the Oklahoma City Wilcox pool has presented a serious handicap in past ef-

FIGURE 3

Oklahoma City pool. Wilcox production. Gas repressure area south of Section 22-11n-3w. Gas injection started November 1938.



Records of the industry indicate that the honor of being the first company in the U. S. to use natural gas for industrial purposes belongs to the Jarecki Manufacturing Company of Erie, Pa.

In the very early days of our company, now 92 years old, foresighted men drilled a well on our foundry lot. For years that well served as our source of power and light.

Among the first to use natural gas for domestic purposes was Alex Jarecki, our late president. His country home is heated by gas from a gas well drilled on this property more than 60 years ago.

What connection have these facts with our present products and services? Just this: They prove that Jarecki's association with the oil industry, both as a source of supply and as a user of its products, dates practically from the beginning of oil production in the United States.

Another "Symbol of Stability"—another of those reassuring things that make Jarecki a good house to deal with.

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BRANCH STORES AT ALL IMPORTANT PLACES IN THE OIL COUNTRY

forts to bring about a secondary recovery program. Wells were drilled for the most part after the consolidation of thousands of separate real estate properties within the city limits. There was also a widespread royalty selling campaign associated with the development of the Oklahoma City Wilcox pool. Even during normal times it would be almost impossible to obtain the consent of the unusually large number of interest holders to any agreement that would permit some type of secondary-recovery operation. Nevertheless, such agreement must be obtained in some manner. There must be some degree of consolidation of ownrship in order to bring about a unitization of the entire field or at least a unitization of large segments of the field in order to permit a fair and equitable secondary-recovery operation.

It is not easy to convince an individual owner of interest in an oil field that consolidation or unitization is necessary and of great benefit to him individually. In a democracy we all cherish our individual rights and liberties. Every owner of interest in an oil field should have the privilege of deciding how an oil property should be operated without surrendering the right of management to any other individual or group or of even cooperating to the mutual benefit of several parties. This attitude, until more recent years, was widespread in the petroleum industry. When it is applied to the pooling of mineral interests it is apt to lead to a short-sighted viewpoint that lacks the backing of sound engineering knowledge. It often robs the owner himself and the nation of the substantial benefit that would result from a community effort in applying secondary operations to otherwise depleted oil fields.

Many Wells Plugged

Owners of the Oklahoma City Wilcox pool have a great deal at stake. The importance of the problem is all the more profound when attention is called to the fact that only about 50 percent of the 888 original wells drilled into the Wilcox pool are now producing and a majority of the others have been plugged and abandoned. The abandonments continue at a steady pace. In 1943, a total of 43 wells were lost to any future recovery operation because of recompleting in other reservoirs or through the necessity of outright abandonments, both for lack of natural production. In a few years, all the wells will be abandoned and it is highly improbable that economic conditions would ever warrant redrilling the field to obtain additional secondary oil recovery.

The problem here presented with respect to the Oklahoma City Wilcox pool in general, applies to many other large and substantial petroleum resources. The critical situation involved in increasing production by secondary recovery means passes beyond individuals or groups of individuals and directly affects the state and the nation. This suggests that some assistance might be rendered operators through legislative enactments. A means might be provided in the form of legislation extending present conservation laws of states whereby reasonable assistance could be rendered to owners of such fields as the Oklahoma City Wilcox pool in bringing about a secondary-recovery project.

A Valuable "How" Article—

How to Determine The Amount of Concrete Needed

By E. N. KEMLER

Professor of Mechanical Engineering, Purdue University

FIGURE 1 on the page opposite, gives in compact form a ready means of estimating the amount of concrete needed and also the materials which need to be supplied for a given amount of concrete.

In making up the chart shown in Figure 1, the values have been based on requirement for a 1-2-4 mix which is commonly used for foundations, reinforced floors, footings, etc. For this 1-2-4 mix approximately .22 times the volume of section in cubic feet sacks of cement are needed. The amount of sand in cubic feet is approximately two times the number of sacks of cement and the amount of gravel in cubic feet is two times the cubic feet of sand. The cubic yards of sand will be approximately 1/60 the volume of the foundation in cubic feet and the amount of coarse gravel or rock will be twice the amount of sand.

More Materials Than Concrete

In a 1-2½-5 mix the number of sacks of cement will require approximately .18 times the cubic feet to be filled in cubic feet. The amount of sand in cubic feet will be approximately 2½ times the number of sacks and the amount of gravel in cubic feet will be approximately two times the amount of sand.

Considerably more than one cubic foot of materials must be used to give a cubic foot of concrete, inasmuch as some of the large pore spaces or voids in the gravel will be filled with sand and some of the void spaces of the sand will be filled with cement particles. The net result is that almost 1½ cubic foot of individual material is required to make one cubic foot of final concrete.

In cases where precise specifications are required or careful control is involved the measurement of the quantities on a weight basis must be used. Variations in porosity of different types of gravel or rock may considerably affect the mix which is obtained. If handled on a weight basis the final mix will in general be much more uniform.

Use of Water

In mixing and placing concrete the amount of water should be kept to a minimum. The strength decreases as the amount of water is increased. The amount of water used is therefore largely determined by the minimum which can be used for best mixing, handling, and placing. For a good concrete job care must be taken to tamp the mixture in place, to eliminate any air pockets, to keep the freshly poured concrete surface moist or prevent drying out, to keep the temperature up in cold weather, and to place the concrete in such a way as to prevent segregation of the coarse and fine particles. These precautions are necessary since the formation of concrete is a chemical and not a drying out process. The setting time of concrete can be to some extent controlled by the use of various expediters. The use of very fine cement will give a quicker setting cement. Also the use of chemical such as calcium chloride will likewise speed up the setting of the concrete.

Start of Problem

Use of the chart for the determination of the amount of sand, rocks and cement needed for a given foundation can best be shown by an example. If the concrete block as shown in Figure 1A is used as an example, the determination of materials needed can be determined from the following procedure. It is first necessary to divide any complicated block into its element, usually into rectangular sections. In the cases of a triangular shaped section the volume can be found by taking half of volume of a complete rectangular section.

Amount of Materials

The solution for the simple block shown in Figure 1A is shown in Figure 1. By entering at the upper lefthand corner at a width of 6 feet, tracing down to a length of 10 feet and then across to a thickness of 3 feet. By tracing up to the upper scale gives the volume of the block as 180 cubic feet. The amount of materials for a 1-2-4 mix are as shown on the various scales. The cubic feet of sand for 180 cubic feet of concrete are 80, the cubic feet of gravel or rock 160 cubic feet and about 40 sacks of cement are necessary. To these values must be added any losses through handling or mixing processes. When the volume is known the amount of materials necessary can be found by tracing down from the volume of the section in cubic feet. The amount of sand and gravel in cubic yards can be found by tracing on down to the scales below the amount of cement. For the above example 3 cubic yards of sand and 6 cubic yards of gravel are necessary.

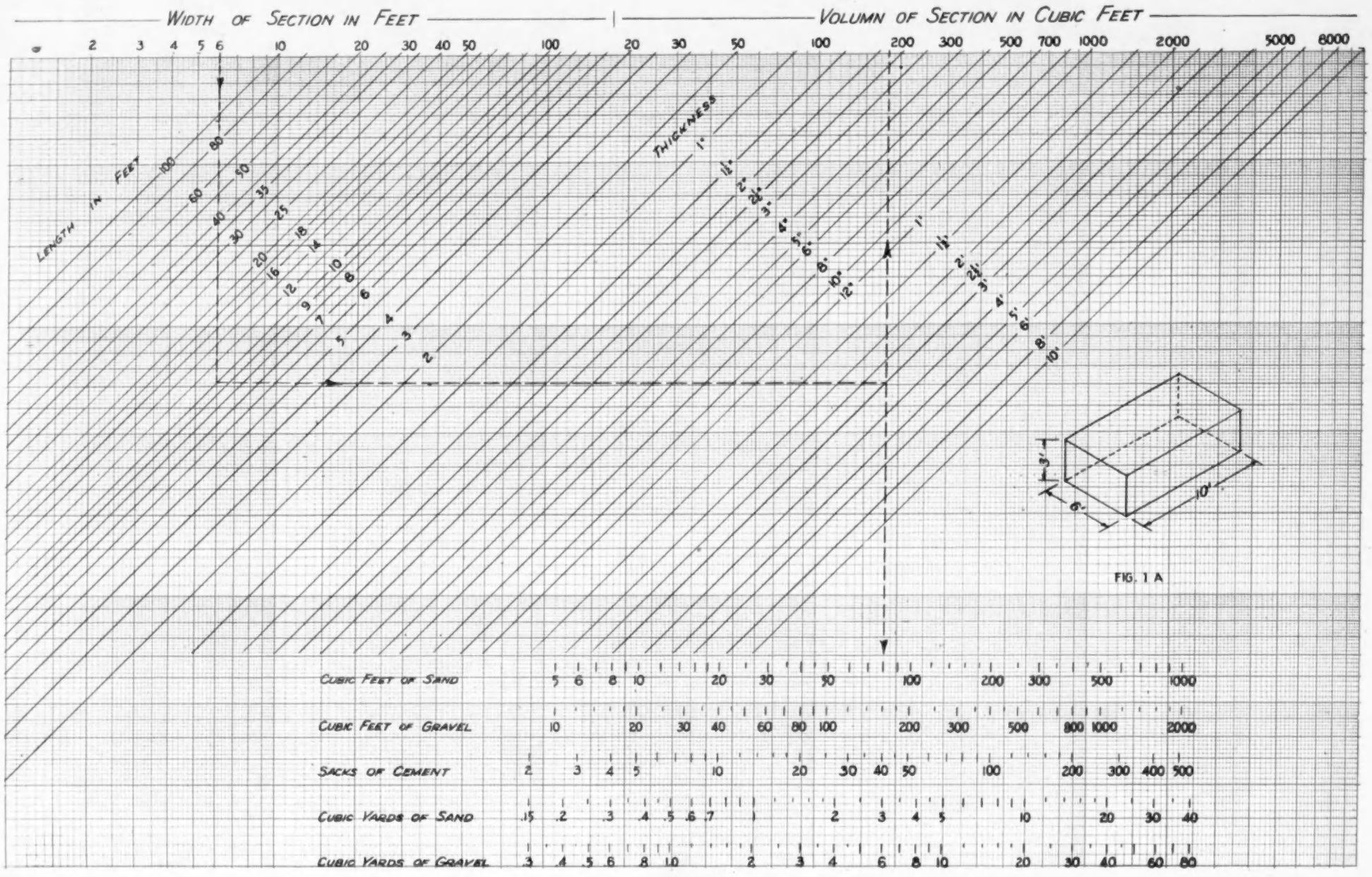


FIG. 1 A

FIGURE 1

Flexibility of Underground Gas Storage Demonstrated

Usefulness of Osage project has exceeded original expectations of company which now plans automatic operation through remote control. Gas being delivered directly into Tulsa medium-pressure system.

By W. R. KUBISTA, Engineering Department, Oklahoma Natural Gas Company

IN 1941 and 1942 Oklahoma Natural Gas Company, looking for a suitable underground storage, investigated an abandoned gas field 1½ miles from Tulsa, one of its principal markets. The field, located in adjoining Osage County, Sections 21, 28 and 29, 20N, 12E and was originally produced by the company for a period of six years.

Preliminary Reservoir Study

The obviously desirable location of the reservoir and its adequate size prompted a careful study of the Company's oil well records and gas production data. Although it was found that gas had been originally produced from four different formations, the Burgess sand, lowest of the four, appeared to be most desirable from the standpoint of reservoir size as well as flow characteristics. The original decline curve for the 5 wells which produced from Burgess sand was plotted. See Figure 1. Flow characteristic curves of the 5 original wells were developed for estimating purposes from open flow data. Data were plotted in accordance with the well flow equation developed by the Bureau of Mines:

$$Q = C\,(P_f^2 - P_s^2)^n$$

where

Q = Rate of flow per 24 hours.

P_f = Shut-in formation pressure. Lbs./sq. in. absolute.

P_s = Back pressure at sand face, Lbs./sq. in. absolute.

C and n from experimental data, determined graphically.

A composite curve of the 5 original wells is shown in Figure 2. Although curves of the original wells were developed from data which were probably not absolutely accurate, they were sufficiently true to furnish advance information as to the probable performance of the reservoir as an underground storage. For example, it was estimated that 5 new wells, having flow characteristics similar to the average of the 5 original producing wells, would be an adequate number for storage under existing conditions. The curves furnished the basic data for estimating probable injection and outflow rates, the time required to fill storage with various volumes, corresponding pressures and the line sizes which would be required.

Among other important data gathered in the preliminary study were:

1.) Compilation of the logs of all wells which had produced or were still producing in and around storage area;

2.) Investigation of the history of water conditions of the sands in and around the storage area;

3.) Legal aspects of leasing the storage;

4.) Methods to be used in drilling and completing storage wells; and

5.) Geological information.

These data enabled the operators to define the probable limits of the reservoir and consequently establish the area to be leased. Contour and isopach maps of the Burgess sand as well as other sands were prepared. It was further concluded that much valuable data for future use could be obtained by coring various important formations when the new wells were drilled.

Reservoir Area

Although the Burgess sand, selected as the most desirable for gas storage, is found generally throughout Osage County, the storage reservoir itself is a small structure in the southeastern part and is confined to an area of about 1280 acres. The area leased consisted of the south half of Section 21, all of 28 and the east half of 29, 20N, 12E. Later the west half of 29 and north half of 32 were leased for reasons which will be given later. In the 1280-acre reservoir area there were 23 oil wells producing from a silicious lime about 400 feet below the Burgess sand. All the old gas wells had been abandoned and plugged prior to 1941.

Burgess sand in the area leased for storage occurs at a depth of about 1600 feet, in the Mississippi lime zone, and is separated from the Mississippi lime by a few feet of shale. It varies in thickness from 15 to 70 feet. The sand body can be generally characterized as follows:

Coarse to medium quartz grains with numerous flow channels and interstitial calcite concretions occurring as nodules. One to two feet of hard, tight quartzite forms the cap rock at the top. Cores taken when the storage wells were drilled showed certain sections of the sand to be very friable.

Core analyses showed the sand permeabilities varied from 100 to 3000 millidarcys, with the weighted average from four cores being 629 millidarcys. The porosity averaged 16.5 percent, with about 20 percent of the pore space occupied by interstitial water.

A contour map prepared from the logs of wells in the area showed the highest part of the Burgess structure to be in the Northeast and Northwest Quarters of Section 28, dipping to the north, south and east and folding into a saddle-like structure on the west. To the west of the saddle is a second producing structure, which although apparently connected physically to the last structure, shows no evidence that they form a part of the same reser-

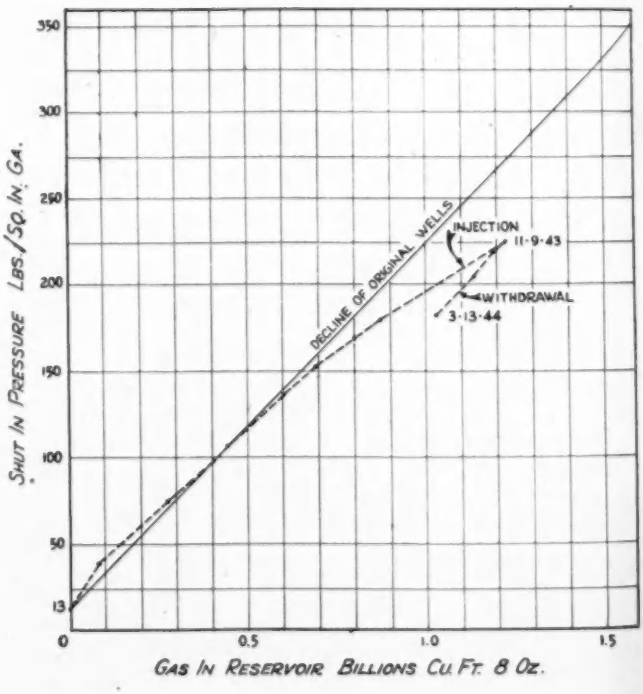
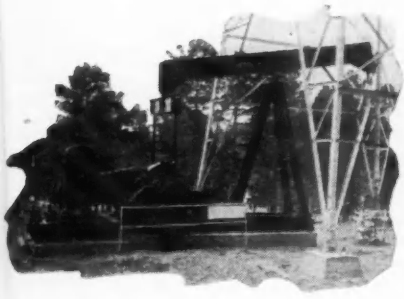


FIGURE 1
Oklahoma Natural Gas Company
Osage storage pressure volume curves.



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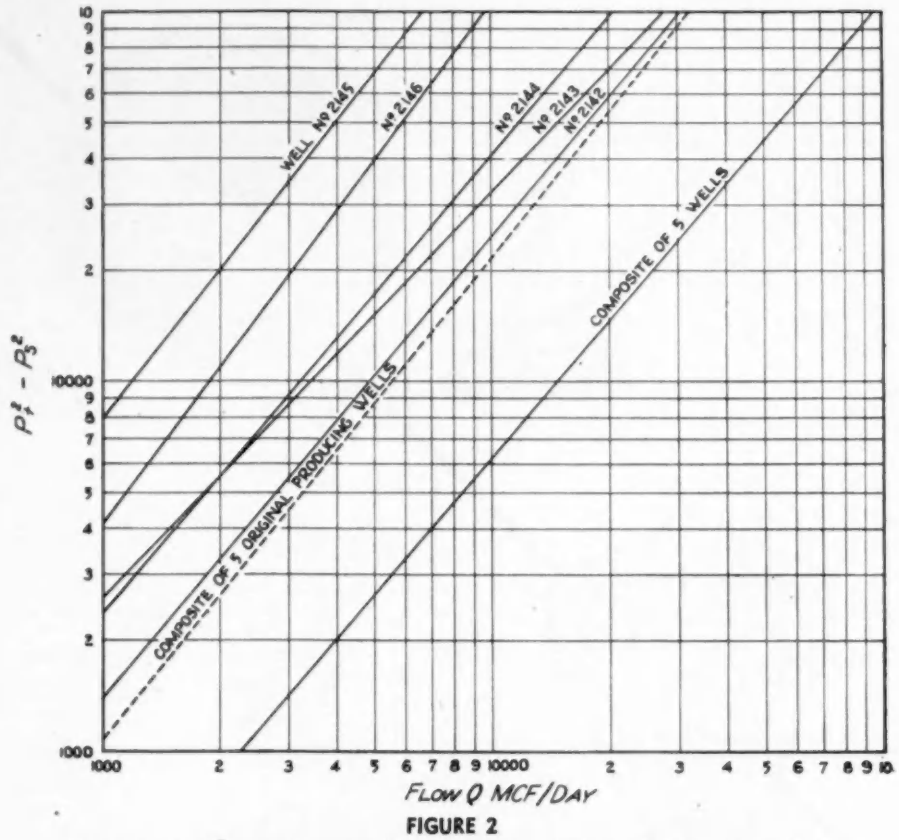

FIGURE 2

Delivery rate of Osage storage wells. Back pressure tests made November 9, 1943. Equation of composite curve: Q 8.4(P_r^2 — P_w^2)0.81

voir. On the contrary an investigation of old production records revealed that the west reservoir was produced at a much earlier date and that its initial pressure was nearly 200 pounds per square inch less than the initial pressure of the east reservoir in which the first gas wells were drilled at a later date. Two gas wells which are still being produced in the west reservoir showed no increase in shut-in pressure after injection was begun in the east reservoir. Pressures in the two reservoirs just prior to storage of gas were 102 pounds per square inch in west reservoir and 13 pounds per square inch in the east reservoir. The west reservoir is not being used for storage.

Original Production

The original producing rock pressure of the reservoir was 565 pounds per square inch. Gas was produced from 5 wells from 1922 through 1928, during which time the total production was slightly in excess of 2.5 billion feet. When the east field was abandoned the rock pressure was 13 pounds per square inch. All the original producing gas wells had been plugged prior to 1941.

The Storage Wells

Five new wells were drilled with cable tools. Drilling commenced March 16, 1943, and the last well was completed July 16, 1943. Besides a short piece of surface pipe, each well was equipped with a string of 7-inch O. D. 24-pound seamless casing which was set on the hard cap rock at the top of the Burgess sand. An 8⅝-inch hole was carried to the casing point to facilitate cementing of the string. It was found that in holes drilled with cable tools the larger annular space assured less erosion of the walls by cement slurry and reduced possibilities of failure of circulation due to cavings. With one exception, the casing string in each well was cemented through all salt-water bearing strata, to a point 800 feet from the surface.

The procedure followed in cementing was to first establish circulation by pumping mud down through the casing until satisfactory circulation of mud was obtained at the surface. Then 320 to 350 sacks of cement was pumped down followed by a plug and a column of water. The plug was stopped about 20 feet from the bottom. After cement had set, water was bailed down and the plug and cement left in the pipe was drilled out.

At this point the well was cleaned out and preparations made to core the sand. Oil was used as the coring fluid so as to insure against contamination of the cores by water other than that which the sand naturally contained.

Complete penetration of the sand section was achieved in all but one well where a particularly soft strata made further drilling difficult and of doubtful value. Injection of gas into the reservoir was begun immediately after completion of the first well. This made coring and completion of the other wells rather troublesome due to increased gas pressure in the reservoir.

Coring was undertaken to provide as much information as possible about the sand, particularly with respect to permeabilities, porosity and water content or changes in water content.

In case of the first two wells where a small coring tool was used, the hole was reamed after coring was completed. In the other three wells where a larger tool was used this was unnecessary.

To provide for the removal of any water which might accumulate in the wells, each one was equipped with a string of 1-inch syphon tubing suspended in the casing head.

The wells were connected to the system so that the same pipe line is used for withdrawals as for injection. Before entering the storage system, input gas is passed through a dust scrubber so as to avoid having pipe-line dust carried into the wells.

Injection of Gas Into Reservoir

Injection of gas into the reservoir was begun April 24, 1943, immediately after the first well was completed. Pressure of the reservoir was 13 pounds per square inch gauge, and as far as could be learned from old records, the same as it was when the last of the original producing wells was abandoned. No compressors were installed because pipe-line pressures and volumes were adequate to supply the entire input.

Almost continuous gas injection was maintained until November 9, 1943, at which time the measured volume in storage was 1,223,000,000 feet. (All volumes referred to herein are 8-ounce pressure base.) On November 9, withdrawals of gas was begun and continued periodically as load conditions or emergencies required. On mild days some gas was injected after November 9, but the withdrawals greatly exceeded this occasional injection.

Volumes and corresponding storage pressure at various times are summarized below:

Date	Measured Volume in Storage	Reservoir Pressure Lbs./Sq. In. Ga.
December 1, 1943	1,200,000 M.c.f.	223
March 13, 1944	1,030,000 "	183
May 1, 1944	1,160,000 "	215

Reference to the pressure-volume curves in Figure 1 will reveal reaction of the reservoir. At first pressure and volume tended to follow the decline curve of the original producing wells reasonably well but after the reservoir pressure exceeded 110 pounds per square inch the storage curve deviates. While not entirely unexpected, it was detected at this time that there was leakage from the reservoir sand into oil wells producing in this area from a lower sand. The difference between the two curves apparently represents a measure of the leakage.

Out of 23 oil wells producing in this area, six developed leakage and in order to gain full control of the problem it was necessary for the company to purchase the oil property. With one exception the oil wells were small, producing from 1½ to 2 barrels per day, and therefore no remedial work was attempted. All the offending wells have been or are being abandoned and plugged.

That part of the storage curve from November 9, 1943, to March 18, 1944, representing withdrawals, indicates that leakage has probably ceased because its general slope is again parallel to that of the original decline curve.

With the advent of mild weather, continuous injection of gas has been resumed and will continue until the reservoir pressure reaches 350 pounds per square inch. This will be accomplished with the present available pipe line pressures and the time required will be about four months.

Well Flow Rates

In order to be able to estimate rates at which storage wells would take and

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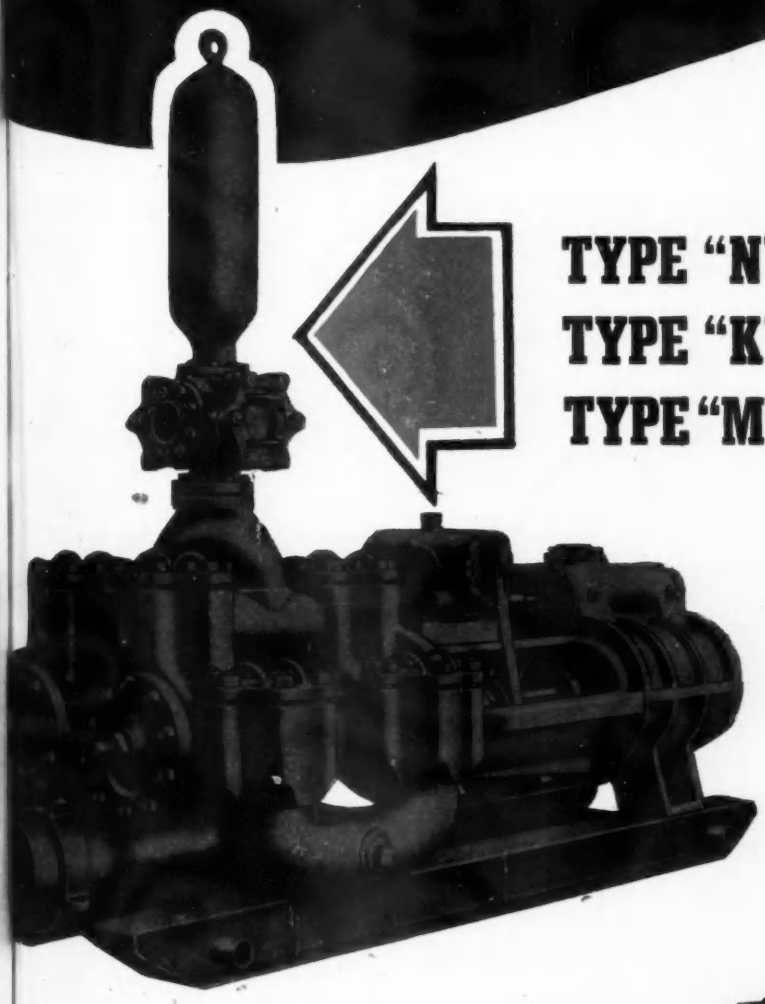

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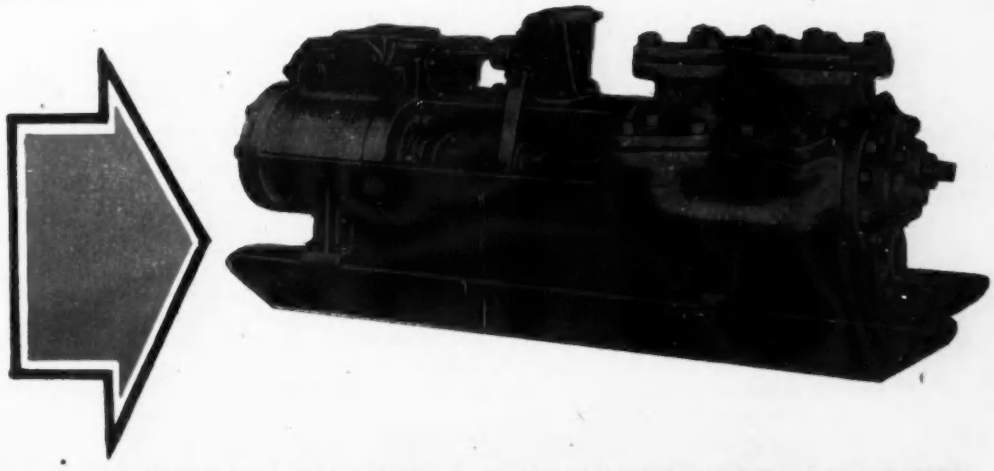

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give up gas under various pressure conditions a series of back pressure tests was conducted on inflow as well as outflow. Although results of inflow tests are not included herein because they were not made on all of the wells, it can be stated that such inflow rates as were obtained corresponded reasonably well with outflow rates under the same conditions. Since it is generally accepted that gas injection rates correspond to the outflow rates in any individual well the more complete and accurate outflow tests have been used herein as the basis for input rates as well as outflow[2].

The method used in the testing procedure, the calculation and plotting of results was that developed by the Bureau of Mines[2]. Results of storage well tests are shown in Figure 2, which in addition to the individual wells includes a composite curve of all 5 storage wells and, for comparison, the composite of the 5 original producing wells. Data for the latter were developed from the company's records of open flow tests.

The generalized equation of the curves representing flow of gas into or out of a well is:

$$Q = C\,(P_f^2 - P_s^2)^n,$$

where P_f is the sut-in formation pressure in pounds per square inch absolute P_s is the flowing pressure in the well at the sand face pounds per square inch absolute,
and the coefficient C and exponent n are determine graphically[2].

Figure 2 shows that two of the storage wells, No. 2145 and No. 2146, have relatively small flow rates as compared with the other three. This can be explained by use of Muskat's fundamental equation representing the radial flow of gas through porous media into a well bore[3]:

$$Q = \frac{\pi\, k\, h\, d\,(P_e^2 - P_w^2)}{u \log \frac{r_e}{r_w}}, \text{ where}$$

Q = Rate of flow.
k = Permeability of sand.
h = Sand thickness.
d = Density at Unit Pressure.
P_e = Absolute pressure of gas at the outer edge of drainage area.
P_w = Absolute flowing pressure of gas at well bore.
u = Viscosity of gas.
r_e = Radius of the well drainage area.
r_w = Radius of well bore.

It will be noted that when all other conditions are equal, the rate of flow Q will depend on the value of the product of the permeability and sand thickness (k x h). For example, compare Well No. 2146 and Well No. 2142, since in both cases the entire sand section was penetrated and the equation will apply, all other conditions the same.

[1] "Gas storage as a part of the operations of a Natural Gas System." By J. H. Dunn. A.G.A. Proceedings 1935.
[2] "Back Pressure Data on Natural Gas Wells and their application to production practices." U. S. Department of the Interior, Bureau of Mines, Monograph 7.

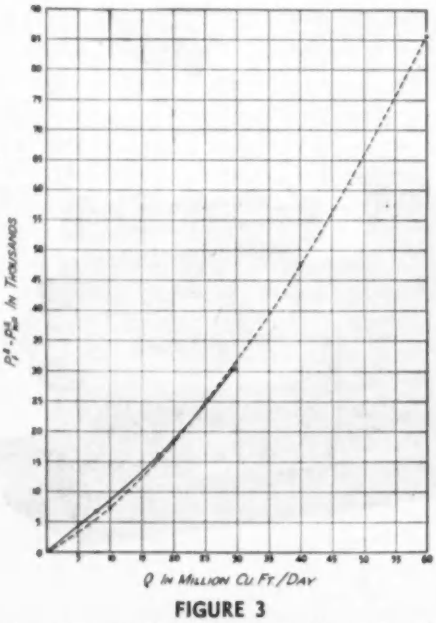

FIGURE 3

Osage Storage System Capacity Test Through Line S-12, November 9, 1943.

Q = Mcf per day
P_f = Absolute formation pressure
P_{wp} = Absolute working pressure upstream at city gate

Equation: $P_f^2 - P_{wp}^2 = \left(\frac{Q}{8.4}\right)^{1.234} + \left(\frac{Q}{350}\right)^2$

Dotted curve represents equation.
Solid curve represents test points.

[3] "The Flow of Homogeneous Fluids Through Porous Media." By M. Muskat, McGraw-Hill Book Company, New York.

	Sand Thickness	Average Permeability
Well No. 2142.....	28 Feet	1.073 Darcys
Well No. 2146.....	25 "	0.443 "

The ratio of the values of (k x h) is:

$$\frac{0.443 \times 25}{1.073 \times 28} = 0.37$$

Referring again to Figure 2, the rate of flow of Well No. 2142 when pressure conditions $(P_f^2 - P_s^2)$ are equal to, say, 20,000, is

Q = 8,400 M.c.f. per day.

Under the same conditions the rate of flow of Well No. 2146 should be

0.37 x 8,400 = 3,100 M.c.f. per day.

Referring to the curve for Well No. 2146, the value of Q from actual test when $(P_f^2 - P_s^2) = 20{,}000$ is 3,050 M.c.f. per day. It is the writer's belief that while, ordinarily, laboratory determinations of permeability do not give results as close as those in the foregoing example, they do supply data of reasonably satisfactory accuracy for comparisons or predictions of well performance.

Deliverability and Injection Rates

The storage delivers gas at reservoir pressure through 1.2 miles of 12-inch line and a city border station directly into the Tulsa medium pressure distribution system, and requires no pumping. It could also deliver gas backward through the supply line into the main transmission system if operating conditions ever demanded it.

Since it was desirable to be able to estimate the delivery rates of the storage system at the city border station under various pressure conditions, a deliverability test was made to obtain data on flow and the corresponding pressures.

It will be remembered that the generalized equation representing flow of gas through a pipe line is:

1. $Q = K\,(P_1^2 - P_{wp}^2)^{1/2}$, where
Q = Rate of flow.
P_1 = Upstream pressure, pounds per square inch, absolute.

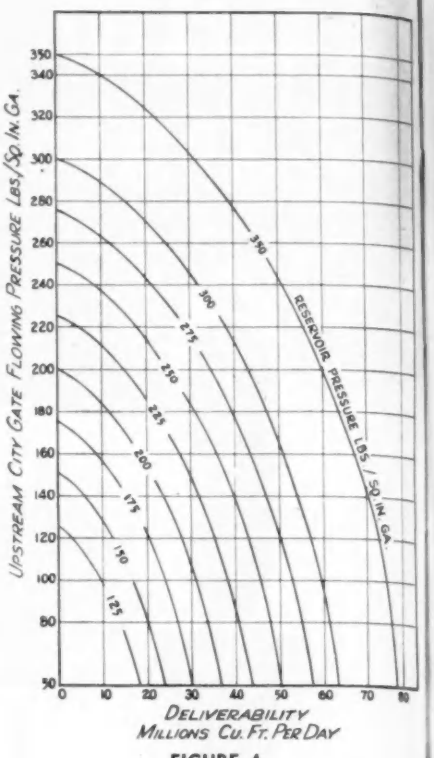

FIGURE 4

Osage storage deliverability through line S-12. Based on test November 9, 1943.

P_{wp} = Downstream pressure, pounds per square inch, absolute.
K = Pipe line coefficient

and the generalized well flow formula is:

2. $Q = C\,(P_f^2 - P_s^2)^n$ with terms as previously defined. Now for all practical purposes the flowing pressure at the sand face of the wells, P_s, can be assumed as equal to the upstream pipe line pressure P_1. Rearranging the terms of equations 1 and 2 we get:

$$\left(\frac{Q}{C}\right)^{\frac{1}{n}} = P_f^2 - P_s^2, \text{ also}$$

$$\left(\frac{Q}{K}\right)^2 = P_1^2 - P_{wp}^2$$

and since $P_s^2 = P_1^2$ (Approx.)

$$\left(\frac{Q}{C}\right)^{\frac{1}{n}} = P_f^2 - P_{wf}^2 - \left(\frac{Q}{K}\right)^2$$

again rearranging terms we arrive at the combined system flow equation:

3. $$P_f^2 - P_{wp}^2 = \left(\frac{Q}{C}\right)^{\frac{1}{n}} + \left(\frac{Q}{K}\right)^2$$

The numerical values of n and C were obtained graphically from the composite curve of the five storage wells. n = 0.81
C = 8.4
Now the system equation can be written:

4. $$P_f^2 - P_{wp}^2 = \left(\frac{Q}{8.4}\right)^{1.234} + \left(\frac{Q}{K}\right)^2$$

The test supplied the data for three rates of flow and the corresponding downstream pressures. Substituting these values in equation 4 it was only necessary to solve for the value of K which would be the coefficient of the mixed sizes of pipe line from the well

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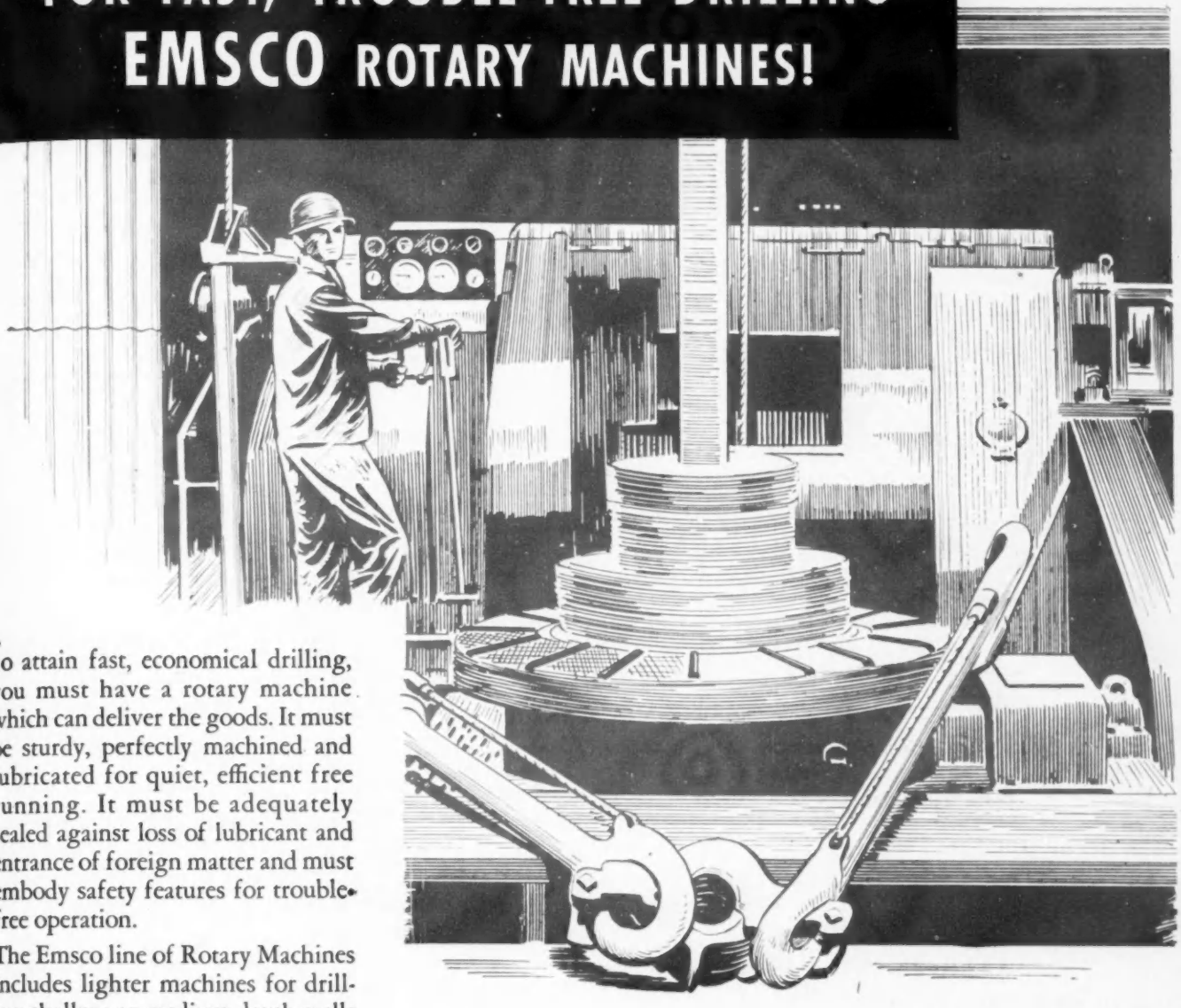

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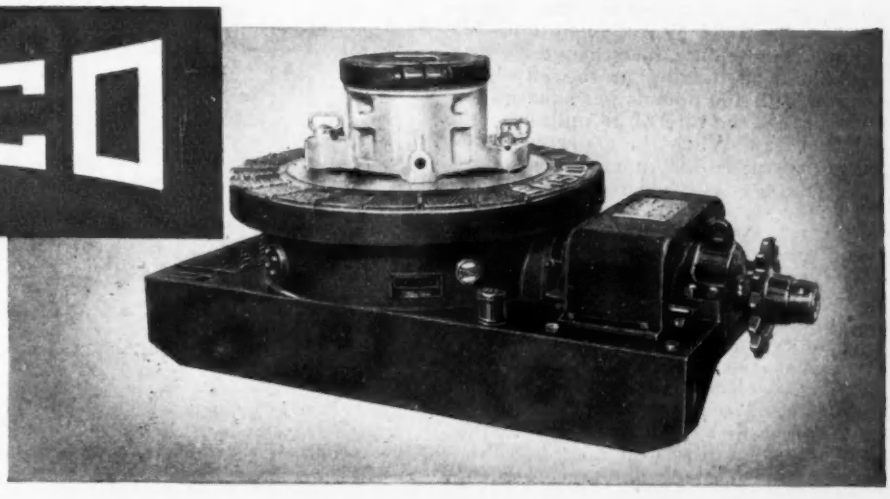

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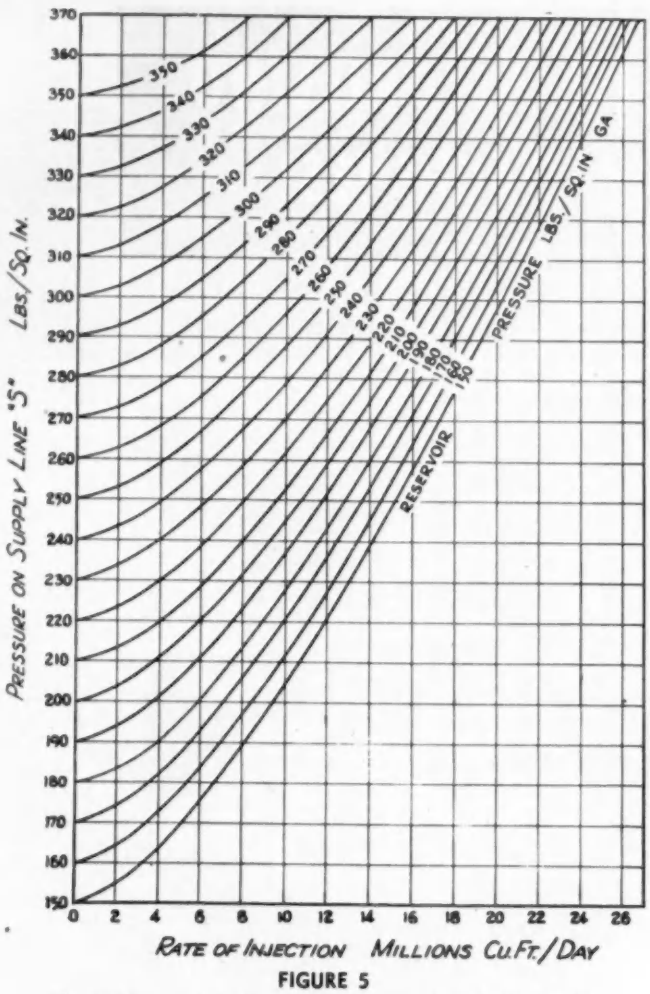

FIGURE 5

Osage Storage Injection Rates Through Supply Line S-12

heads to the city gate. The average value of K was determined to be 350.

The completed equation for the system then is:

$$5.\ P_f^2 - P_{wp}^2 = \left(\frac{Q}{8.4}\right)^{1.234} + \left(\frac{Q}{350}\right)^2$$

It is plotted in Figure 3 together with a curve through the actual test points and the two curves are in reasonably good agreement.

The foregoing is not a rigorous derivation of the system flow equation but the curves derived from it in Figure 4 have been found to be accurate enough for estimating purposes. Reference to the curves will show that at the maximum pressure reached by the storage during the past year's operation, 225 pounds per square inch gauge, it was capable of delivering at the city gate station with 100 pounds per square inch pressure, at the rate of 38 million cubic feet per day. When the expected maximum pressure of 350 pounds per square inch gauge is reached during the 1944 cycle, the storage is estimated to deliver at the rate of 75 million cubic feet per day.

Curves for estimating injection rates through the supply system were derived in a manner similar to the foregoing deliverability rates. A combined system formula was derived and the only difference between the fundamental equations for input and output is that the order of the pressures is reversed. Under the present system of storage operation only four wells are used simultaneously for injection. The injection rate curves in Figure 5 are for four wells. The maximum injection rate which will be achieved under present operating conditions will be about 20 million feet per day.

Effect of Storage on Operations

In any study of an underground gas storage perhaps the most important elements are those which justified the storage in the first place. Some of these factors are:

1. A means of supplying peak load and emergency gas.
2. A means of conserving gas reserves.
3. A means of protection in areas of competitive gas supply.

The Osage Storage, as this project is called, mainly affects the operations of the Company's eastern Oklahoma system although it is possible that under certain conditions some of its benefits will be felt in the western Oklahoma system. In addition to many small towns, the eastern system supplies the cities of Tulsa, Muskogee and Okmulgee, serving approximately 79,000 customers.

To study the effect of the storage on loads, we have employed a modified type of load curve. Such curves are most useful in studying and planning loads for systems which have numerous sources of supply. The modified load curve can be made for any period of time, a day or a year, from the demand curve or data for the same period of time. Ordinates represent demands and abscissas the delivery. Only two points need actually be plotted; one is the minimum demand versus the delivery at 100 percent load factor, the other is maximum demand versus total actual delivery for the period of time to be represented by the curve. From zero to the minimum point the curve is a straight line, or 100 percent load factor line, since that much is being delivered at all times during the period represented. From the minimum to the maximum the curve for all practical pur-

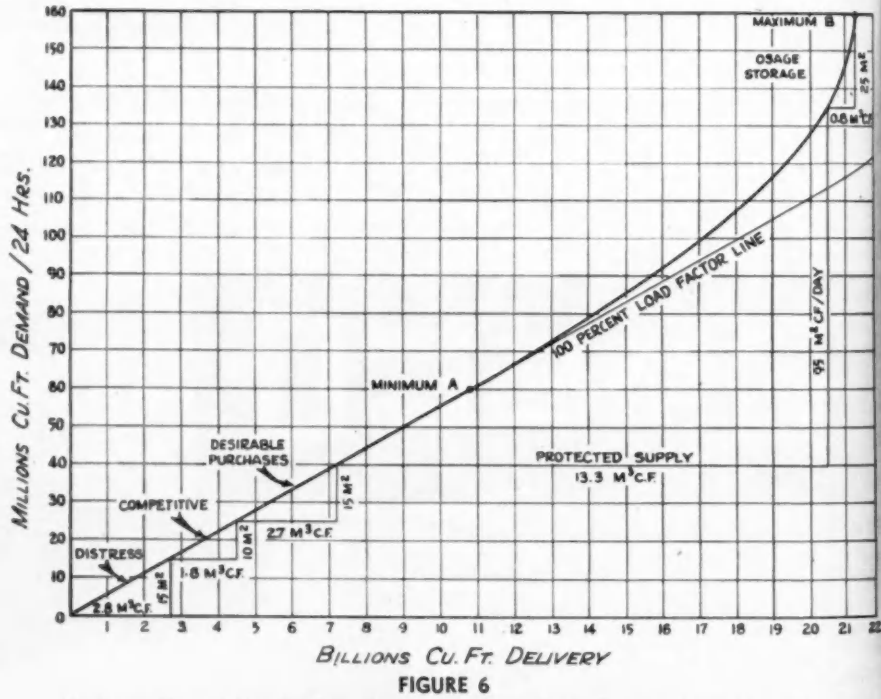

FIGURE 6

Oklahoma Natural Gas Company Eastern Oklahoma System Modified Load Curve for Gas Injection Period April through September, 1944.

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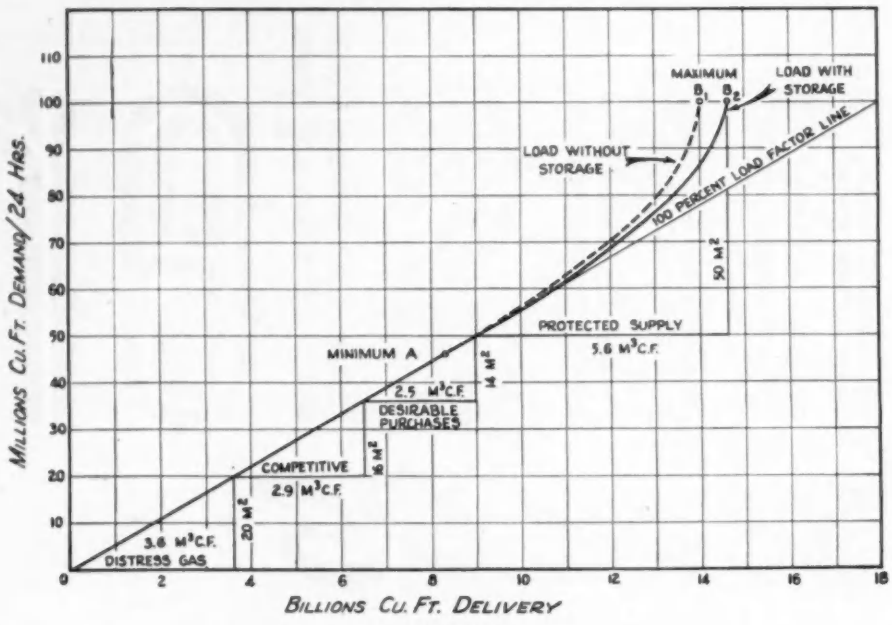


FIGURE 7

Oklahoma Natural Gas Company Eastern Oklahoma System Modified Load Curve for Storage Withdrawal Period January, February, March and October, November, December, 1944.

poses is parabolic, being tangent to the minimum and maximum points. Actually the modified load curve is simply a graphic representation of the increment areas and therefore the deliveries under its corresponding demand curve.

Figure 6 is such a modified load curve for the Oklahoma Natural Gas Company's eastern Oklahoma system. It represents a period of six months, April through September 1944, or that period during which gas will be injected into the storage. The curve clearly reveals the effect of the storage on load factor when it is calculated with respect to the peak load for this period. In effect we have added 600 million cubic feet to the deliveries without increasing the peak and the curve tends to flatten out toward the 100 percent load factor line, obviously an improvement in load factor. Curve OAB_1 represents the load without storage and Curve OAB_2 with gas going into storage.

Under the load curve are represented the volumes and rates to be delivered by various sources of supply. Distress gas, gas from competitive fields and that which it is desirable to purchase for various reasons, are all pulled every day as near capacity or 100 percent load factor as possible. By planning it in this manner, the company's own protected supply will be conserved and only used when demands exceed 50 million cubic feet per day.

Occasionally, in more normal times when industrial loads are not so great, the first three blocks of supply exceed requirements of the normal summer load. Under such conditions any load added by virtue of gas placed into storage tends to utilize these supplies more effectively and the problem of efficient utilization can be conveniently represented and studied with modified load curves.

Figure 7 is a similar modified load curve for the eastern system for the remaining six months when gas is being withdrawn from storage. The effect of the storage here is that withdrawals reduce the 24 hour system peak from 160 million to 135 million cubic feet. Thus for the entire 12 months period the effect of storing 600 million cubic feet during the summer of 1944 and withdrawing 800 million cubic feet during the winter months is to improve the annual load factor, over what it would be without storage, from 60.5 percent to 72.8 percent.

1944 Summer load without storage = 14 Billion Ft.
1944 Winter load without storage = 21.3 Billion Ft.
Total .....35.3 Billion Ft.

Possible load at 100 percent annual load factor is:
160 x 365 = 58.4 Billion Feet.
35
58.4 = 60.5 percent annual load factor.

1944 Summer load with storage = 14.6 Billion Ft.
1944 Winter load with storage = 21.3 Billion Ft.
Total .....35.9 Billion Ft.

Possible load at reduced system peak basin is:
135 x 365 = 49.3 Billion Ft.
35.9
49.3 = 72.8 percent annual load factor.

Third Modified Curve Load

A third modified load curve is presented in Figure 8 showing an estimated peak month. In this curve the demands are hourly demands in terms of 24 hour rates and it therefore represents the extreme peak load conditions generally encountered in January or February. The highest peak hourly demand, in terms of 24 hour rate, which might possibly be reached under present conditions was estimated to be 208 million feet per 24 hours. While the eastern Oklahoma system, together with the storage, could probably deliver at such a rate for short periods it would be unwise to expend so much gas from storage and thereby reduce its deliverability below the minimum requirements of peak days or possible emergencies which might occur during the succeeding months. Besides this, a part of the calculated peak demand includes contract requirements which are sold on an off-peak basis and are therefore curtailable and not eligible for service when it becomes necessary to use the storage. The load curve in Figure 8 shows this estimated curtailment as well as how the remainder of the load will be handled. The position of the storage block shows that it takes the swing in the load over the peaks and that a maximum deliverability of 31 million cubic feet per day will be required. Estimated withdrawals from storage during such a period would be approximately 400 million feet.

Conclusions

Although the Osage Storage has been in operation for less than one year its flexibility and usefulness has exceeded the original expectations. The fact that it delivers gas directly into the Tulsa medium pressure distribution system is an outstanding feature. Plans are being developed to take further advantage of this by making the operation of the storage more or less automatic through remote controls extending to the Tulsa pressure dispatcher's office.

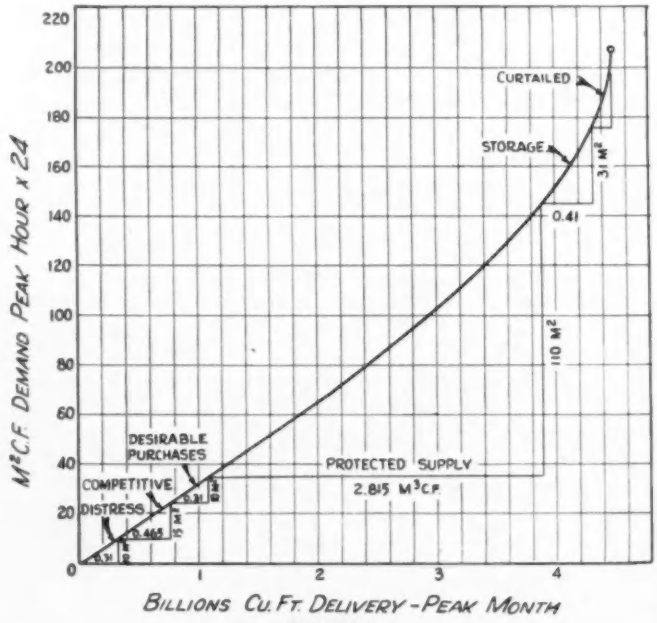
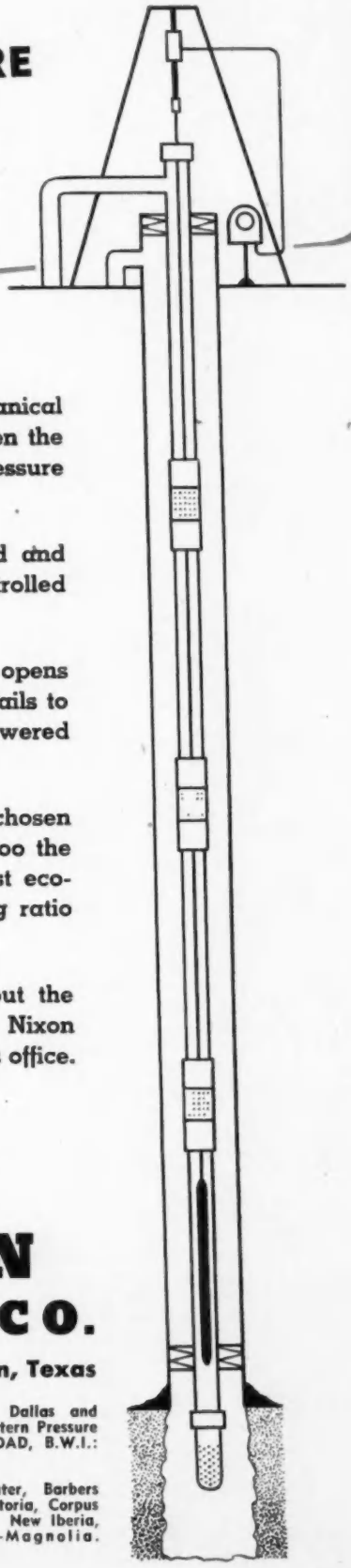


FIGURE 8

Oklahoma Natural Gas Company Modified Load Curve for Estimated Peak Month of 1944

NIXON FLOW VALVE OPERATION

IS NOT AFFECTED BY CASING ANNULUS PRESSURE OR VOLUME OF FLUID IN TUBING



The operating flow valve of the Nixon Gas-Lift is opened by mechanical action. The weight bar, when raised into the flow valve forces open the ball and seat valves, which are held in a closed position by the pressure in the casing annulus.

The actual raising and lowering of the weight bar is performed and controlled on the surface, by the weight cylinder and time controlled intermitter.

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In Texas—

Gas Laws Need Revising

By GEORGE O. IVES, Staff Writer

RECENT developments in attacks on orders of the Railroad Commission of Texas promulgated in an effort to establish equitable and efficient methods of operation in gas-distillate fields, are making it more apparent that the basic gas laws of this state are no longer adequate to meet present conditions. There have been no changes in the statutes since cycling and pressure maintenance have become important operations and although much oil is now being recovered through cycling and pressure maintenance which would never otherwise have been producible, much oil is being irretrievably lost through operational practices which in final analysis are harmful to reservoirs.

Many Texas operators are concerned about this problem and speak of the urgent need for the industry to put forth a concerted effort to see that proper legislation is enacted to give full statutory backing to methods of production and allocation prescribed after thorough studies of individual fields. Pressing needs are for ratable taking provisions, and proper field-wide spacing and allocation formulae recognizing gas in place, and for protection of correlative rights.

Definitions in Statutes

The statutes, written in 1925, and still in force, define a gas well as any well producing in excess of 100,000 feet of gas for every barrel of oil. A crude oil well is any well producing hydrocarbon fluid, regardless of gravity, at ratios below 100,000 to 1, also regardless of whether or not such hydrocarbon fluid exists in a gaseous phase in the reservoir. If a well produces liquid at the well-head or separator at ratios below that prescribed, it is an oil well.

An order written by the Railroad Commission in 1939 defines a condensate well as one in which the liquid obtained at the well-head exists in a gas phase in the reservoir and is formed by decreases in pressure and temperature after such gas leaves the reservoir. Such wells will be classified as gas wells with production uses restricted to those provided in Article 6008, including wells whose production is only partly condensate and partly crude oil. This classification is permissible only when the crude petroleum oil is produced at a ratio of 100,000 to 1 or less.

The only restrictive provision regarding production of gas is that limiting production of gas for legal usage to 25 percent of open flow potential. Power has been given to the Railroad Commission to limit gas withdrawals from gas fields strictly on the basis of physical waste with no relation to correlative rights. There are no provisions for ratable taking by operators or by common purchasers. Thus, if a well is drilled inside a gas-condensate field where the balance of the field is unitized for recycling operations, and the operator establishes a market and pipe-line facilities, there is nothing in the statutes to prevent him from producing and selling any amount of gas up to 25 percent of his well's open flow potential, even though he is draining his neighbors of gas they are cycling and returning to the reservoir.

Sections 8a and 8aa of Article 6049a provided for common purchasing by pipe line operators and purchasers, forbidding discrimination in favor of purchasers' own production, but this provision was declared unconstitutional and an operator with pipe-line facilities does not have to run gas offered by others.

Section 21, of Article 6008 declares it is lawful for two or more operators, lessors, lessees, or other persons or firms to enter agreements for cooperative development, but the agreement shall bind only those entering. Thus they are not protected from those who did not enter the unitization agreement.

Flare Waste

Legal use of gas may be for light, fuel, or gas-lift. However, after using gas as means of artificial lift for oil wells, it may then be flared regardless of the amount. During 1942 in the Rodessa field, 60,000,000 to 70,000,000 feet of gas per day were being flared legally because of having first been used as gas lift. This waste is being reduced since several pipe line operators have installed compressors to raise pressure of used gas to a point where it may be introduced into commercial lines.

On March 15, 1944, Justice James W. McClendon in a case affecting the Bammel field, Harris County, gave some hope that it would be possible to write orders protecting correlative rights by prorating gas withdrawals from all wells producing from a common reservoir, but apparently that right is questioned by the Texas Supreme Court which granted a writ of error. The court cites an old case in which it had stricken down an order of the State Board of Water Engineers dividing riparian rights.

In the Bammel field, where there are only two operators, one controls most of the field with 15 gas wells connected to a centrally-located recycling plant which processes 35,000,000 feet of gas daily, extracting the liquids and returning all but 2,000,000 feet to the reservoir. The other operator owns a 79-acre lease, equal to 4.1 percent of the field, not connected to the recycling plant, but connected to pipe-line facilities with a market in Houston for 5,000,000 feet of gas daily. The Railroad Commission issued an order on January 17, 1942, finding that withdrawals from the field up to 20,000,000 feet daily would not produce appreciable waste and net withdrawals up to this amount were authorized, prorating withdrawals under a formula which should apply "only after the net daily volume of gas produced, averaged over a thirty (30) day period, has exceeded an amount of nineteen million (19,000,000) cubic feet."

This order was attacked by Harrell, owner of the larger part of the field, who finally obtained judgment setting aside the Commission's order on the ground that Corzelius, the other operator, was producing more than his fair share of total new volume allowable from the field and was consequently creating a net drainage, by volume, from Harrell's holdings, although Harrell through present methods of extracting liquids, may be reducing recoverable amount of distillate in gas from Corzelius' property.

Strangely enough, under present statutes, and in absence of any order by the Commission, Harrell would really be in worse position, since Corzelius could then produce any amount up to 18,000,000 cubic feet daily if he had such a market, and there is no authority for any order forcing him to take any gas from Harrell's wells, or limiting his take from his well so long as he stays below the figure set as the maximum producible from the field without physical waste.

Compact Considers Gas

The Interstate Oil Compact Commission in 1942 decided that uniformity in gas regulation between states is more important than uniformity on oil legislation. Its committee after study thought statutes should be enacted by the state legislature containing provisions similar to the following:

"Commissions should permit or require recycling of gas in any pool of portion thereof; and it is also authorized to permit or require introduction of gas or other substance into an oil or gas reservoir for the purpose of repressuring such reservoir, maintaining pressure, or carrying on secondary recovery work."

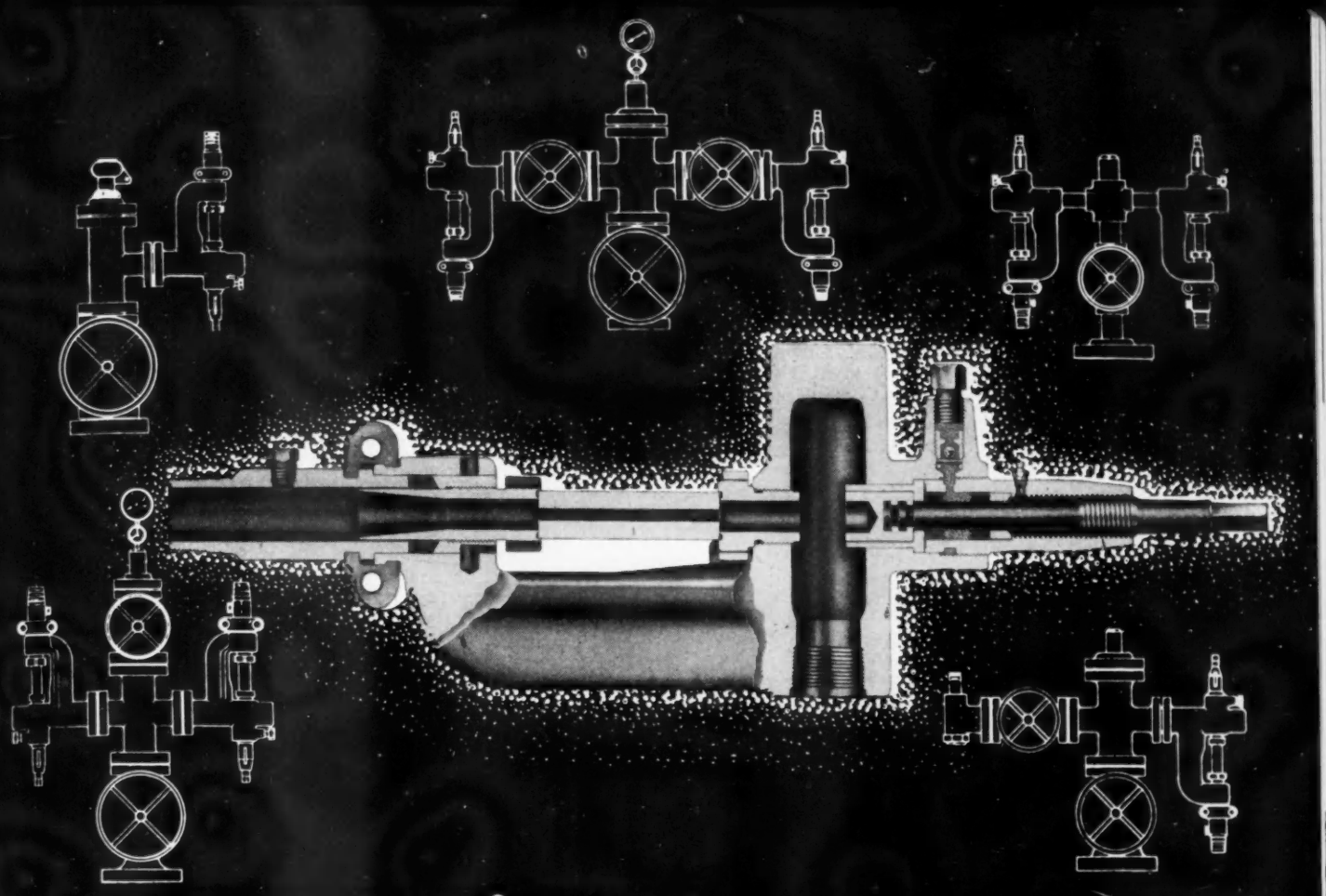
". . . The Commission may require pooling of tracts when reasonably required in cycling and recycling operations following substantially the procedure and standards as hereinafter provided with respect to pooling of tracts to form a drainage unit."

The committee thought each state should have a law providing for ratable taking and common purchasing by carriers, as well as recycling, etc.

A recent order of the Railroad Commission regarding the Lake Creek field in Montgomery County, gives some hope that a solution of the problem in at least some areas may be possible through approach to the question of physical waste in the reservoir as a whole, and there is apparently no question as to the Commission's authority on this one point. The issue at Lake Creek was the exceptionally rich gas content, a large portion of which might be lost in the reservoir through retrograde condensation if virgin pressures are allowed to drop below a certain point. On the grounds that this would result in physical waste, the Commission ordered cycling of gas so that pressures in three sands might be maintained at a point to insure prevention of condensation in the reservoir and thus insure maximum ultimate recovery of hydrocarbon content of the gas.

Even so, one of the commissioners, although heartily in favor of the program, failed to sign the order because he doubted the commission's statutory authority to "take this very constructive and forward step."

It is obvious that with regulatory bodies constantly faced with problems of such importance, statutes should be adopted which would give them this authority and remove such doubts.



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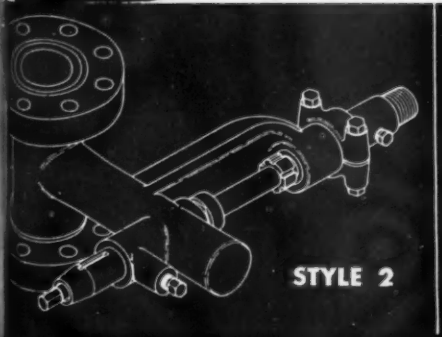
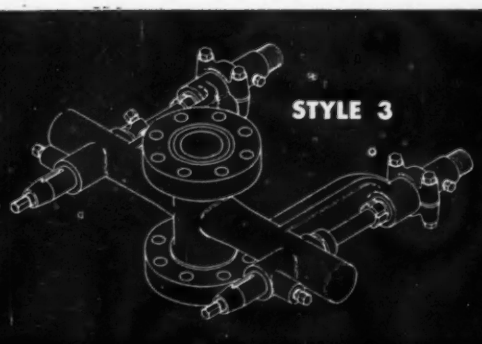
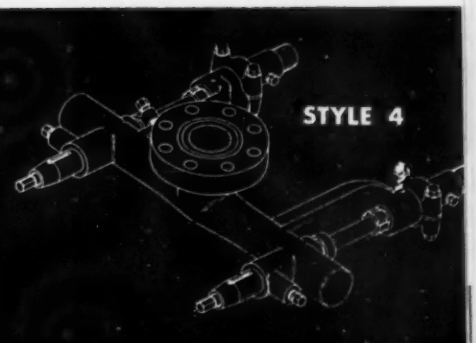


Type Flow Wing for installation in vertical run of Xmas tree



Cross Type Flow Manifold for installation in vertical run of Xmas tree.



Tee Type Flow Manifold for installation in horizontal run of Xmas tree

Montana's Newest Discovery Of Particular Significance

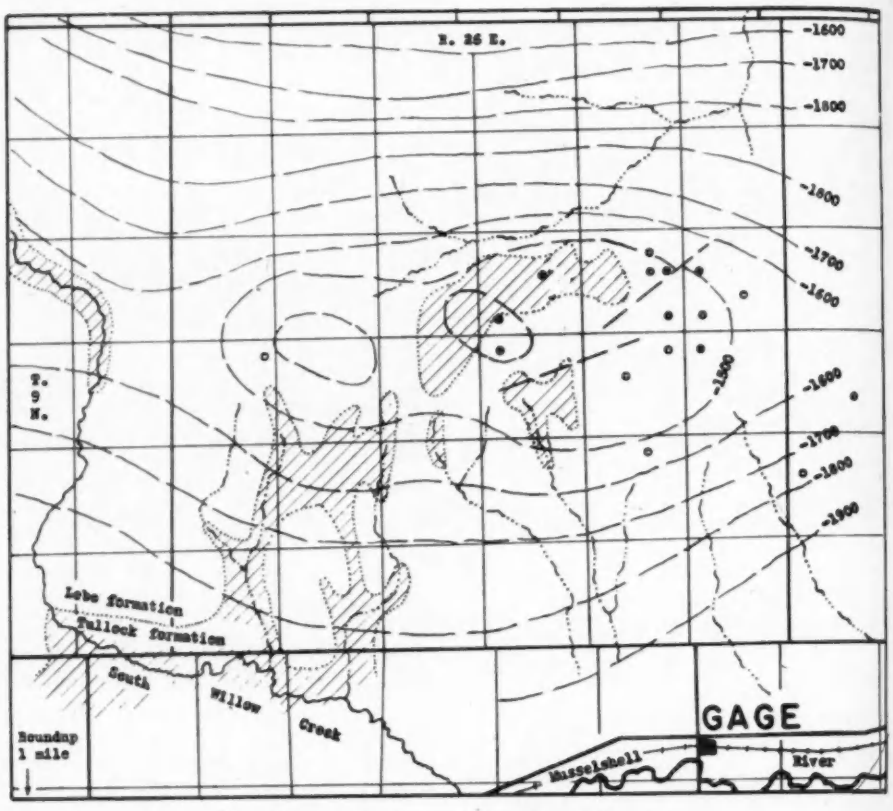
Numerous anti-clinal structures in central part of state likely will be re-examined as result of Gage field find. Mississippian stratigraphy to be center of some special attention. Present commercial production comes from 8 fields distributed in plains along the mountain front

By EUGENE S. PERRY

Head, Department of Geology, Montana School of Mines, Butte, Montana*

THE discovery of oil on the Gage dome in Montana is of particular interest in that (1) it shows the presence of oil in deep lying upper Paleozoic limestone (Amsden) previously not known to contain oil in central Montana, and (2) because structural conditions do not appear as favorable as in other near-by areas in which commercial oil at a similar horizon has not been discovered by drilling. It will result in re-examination of central Montana's numerous anticlinal structures with special attention being given to Mississippian stratigraphy. In fact oil accumulation at Gage may result from conditions of porosity as much as, or more than, conditions of structure. Present development indicates that Gage field will become one of major importance in the northern Great Plains.

Oil on Gage dome, known and mapped over 20 years ago, was discovered in August 1943 by Northern Ordnance's Morris A-1 well near the southwest corner of 15-9n-26e, which is believed to be near the structurally high point of the dome. Oil occurred in the Amsden limestone of Upper Mississippian age (uppermost Chester) at 5960 feet. The hole bottomed in the upper 50 feet of Madison limestone (Osage age) at 7490 feet without other oil showings. Initial production is reported as 25 barrels per day of 33 Baume light-colored oil. A second well 1½ miles northeastward (Darr 1) is reported to have yielded 350 barrels per day from the same horizon, and a third well (Morris A-2) ½ mile northeast, completed in May, 1944, yielded at rate of 2500 barrels per day. By June, 1944 there were 17 locations on many of which rigs were operating.



Structural contour map of Gage Dome, Montana.
(Modified after U.S.G.S. Bull. 786-B)

Montana's Oil Fields

Oil is produced commercially from eight fields distributed in the plains along the mountain front in central Montana, and is known to occur in three other localities, one of which is near the North Dakota state line. Total production in 1943 was slightly less than 8,000,000 barrels. Most important is the Cut Bank field near the Canadian border which in 1943 yielded 6,000,000 barrels of 35 Baume oil from lower Cretaceous sandstone (Kootenai) at 3000 feet. Next in importance is the Kevin-Sunburst field producing from the Madison limestone at 1400 to 1600 feet depth. The Elk Basin field on the Wyoming line, for 30 years a minor producer from the upper Cretaceous, has recently gained importance through discovery of oil in large volume in Pennsylvanian sandstone (Tensleep) at a depth of about 4900 feet; and it promises to over-shadow other fields. Also of interest in this part of Montana is the discovery of minor showings of oil in Ordovician and Devonian strata. (Ohio well, Dry Creek field), although showings amounting to about one barrel per day in the Devonian were found in the Kevin-Sunburst fields in 1930.

Nearest oil to Gage is the Devil's Basin field, 6 miles northward, where the Amsden was found barren on exceptionally pronounced anticlinal structure, but the Big Snowy immediately underlying the Amsden yielded small quantities of heavy black oil. Nearest known oil in the Amsden is in the now dormant Soap Creek field 85 miles southward.

Of Montana's 1943 oil production approximately 70 percent came from lower Cretaceous strata, 5 percent from the Pennsylvanian and Cretaceous, and 25 percent from the uppermost part of the Mississippian Madison limestone. Other formations known to contain some oil are Devonian (Jefferson), Pennsylvanian (Tensleep), Permian (Embar), Jurassic (Ellis) and Triassic (Chugwater). However, strata of these periods (and likewise upper Mississippian) are not present everywhere in Montana. An overlapping and interfingering from different directions of thick formational units requires careful subsurface interpretations throughout central Montana, and the determination of paleogeographic and paleogeologic factors in Montana will have a strong bearing on possible new oil discoveries.

General Geology of Gage Field

Gage field lies on the south slope of a rather unusual bench-shaped, or mesa-shaped, uplift 175 miles long and 40 miles wide striking eastward from the main ranges of the Rockies in central Montana. (See diagramatic map and cross-section). It is known as the Big Snowy-Porcupine uplift from two prominent domal components, but numerous anticlinal and synclinal elements are present. North and south of the up-

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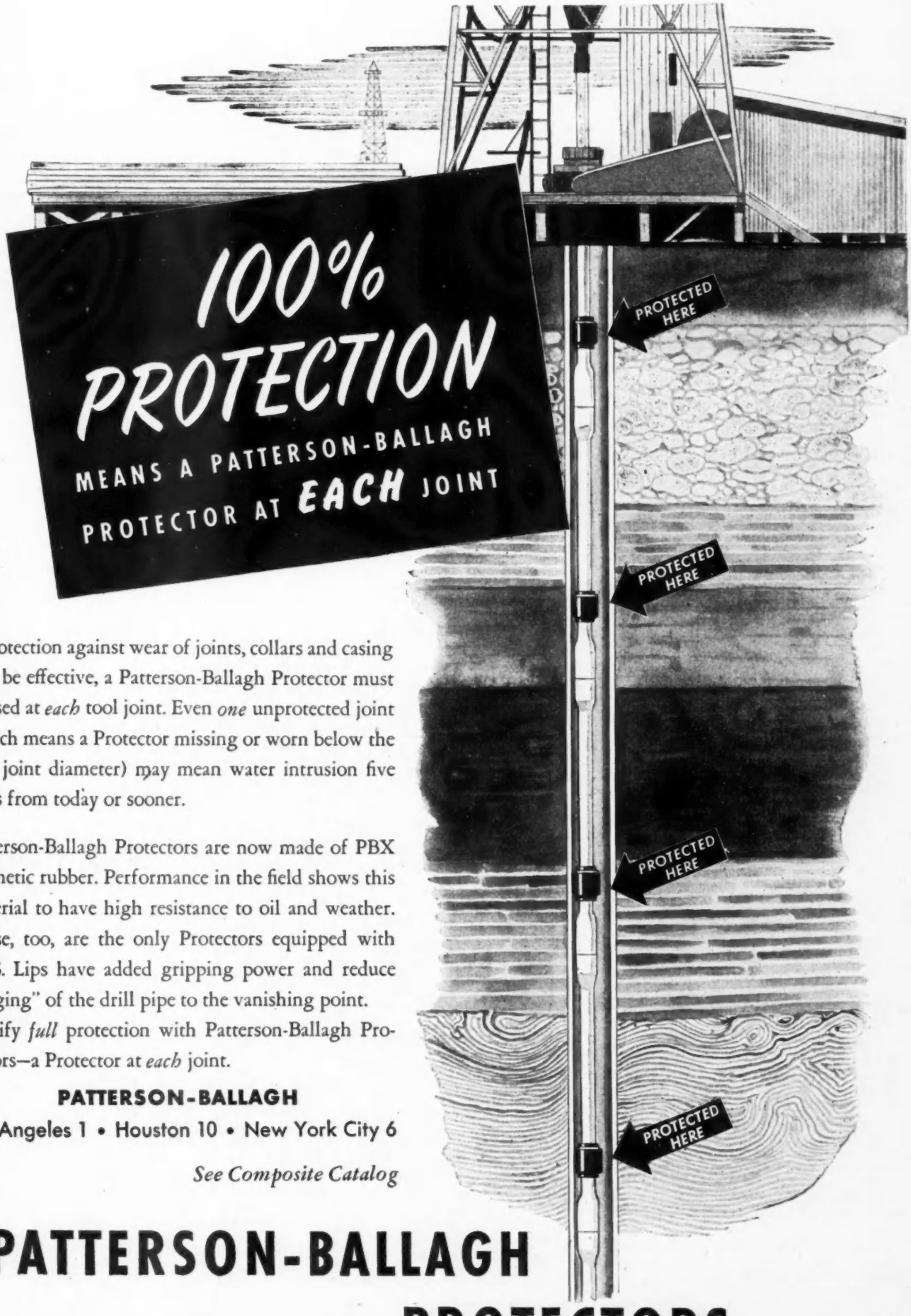

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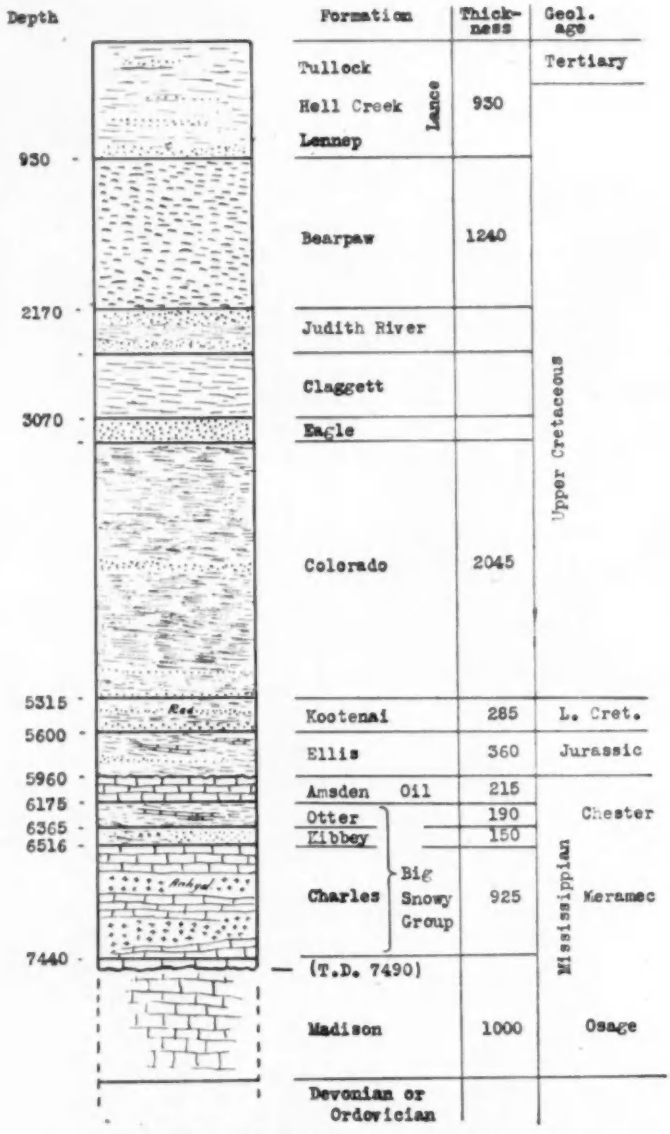


Graphic log of Morris A-1, Discovery on Gage Dome, Montana.

lift lie broad deep geosynclinal areas. Maximum structural relief is in the order of 14,000 feet, but in the oil-producing portion of the uplift structural relief is about 5000 feet. Outsanding features of the uplift are the steep structural slopes (up to 80 degrees) on the south and north sides, and the roughly rectangular shape o the bench-like surface.

Igneous dikes, commonly basic, are present in many places, a few showing at the surface near the extreme eastern end of the uplift. Moccasin and Judith Mountains are laccolithic bodies of syenite, but igneous rocks have not been reported in the Big Snowy Mountains, most accentuated unit of the uplift.

The Cat Creek oil field at the top of the steep slope on the north side, although on domal structure, is believed to result, at least in part, from minor normal faulting of a complicated pattern offsetting the producing 20-foot lower Cretaceous sandstone. The Devils' Basin oil field (long inactive), at the top of the steep slope on the south side, yielded small volumes of black heavy oil with little or no gas pressure from what is probably a porous limestone (Van Duzen "sand") in the Otter formation of the Big Snowy group. Nearly 100 test wells have been sunk to Jurassic strata on this uplift, but only about 12, including 3 at Gage, have penetrated the Mississippian strata. Of these 12 four have yielded oil and one gas.

As shown on the geologic cross-section (see page 37), Gage dome is a minor flexure forming a terrace-like interruption about half way down the steep south slope of the uplift. Strata at the surface on Gage dome (top of the Tullock, "Lance") dip southward to a depth of 1500 feet in 6 miles, and strata 3200 feet deep at Gage (top of Colorado) rise to the surface 6 miles northward. The width of the terrace-like area is about 5 miles and its length along the steep slope is 20 miles, its western end being known as "West Gage." The syncline separating Gage dome from the higher part of the uplift to the north is shown on published structural maps to be about 400 feet deep, but the actual structural closure of Gage dome is about 200 feet.

Erosional Breaks Separation

Drilling in the central portion of the Gage dome begins in strata practically at the top of the Tullock formation (uppermost Lance), dividing line between Cretaceous and Tertiary systems in central Montana being at or near the base of the Tullock. Mesozoic and Tertiary strata composed essentially of shale with occasional sandstones, as shown on the accompanying graphic well log, are approximately 6000 feet thick in this locality. The Jurassic is separated from the Mississippian by an unconformity which cuts out Lower Jurassic, Triassic, Permian, and Pennylvanian strata. Another unconformity within the Mississippian is indicated by the absence of the Heath formation, upper division of the Big Snowy group. Thus, the 215 feet of Amsden limestone, oil-producing horizon, are separated from strata above and below by marked erosional breaks. Charles formation, composed of 925 feet of alternating dolomitic limestones and massive beds of anhydrite immediately overlying the Madison limestone, attracts attention of local drillers, as do also the presence of Otter and Kibbey formations, because they are not encountered in northern or southern Montana; however the succession of Mississippian strata from Otter shales downward are normal for central Montana.

Amsden limestone is not known to be characteristically porous in its outcrop areas in the Big Snowy Mountains 30 miles west of Gage, or as seen in well cuttings in the region north of Gage. This may account for lack of oil or gas within it at Cat Creek, Devil's Basin and elsewhere to the northward. Presence of porosity in the Amsden 50 miles east of Gage is shown by presence of high-nitrogen gas flowing at the rate of 8 million feet per day from this horizon in a well on the Ingomar dome. The Amsden is also porous along the Wyoming state line 100 miles southward. To the southwest 40 miles, near Broadview, neither oil nor gas was reported in the Amsden, although a showing of oil was present in the Madison. These conditions lead to some speculation as to whether the oil at Gage is to be explained mainly by change in porosity or by structural conditions.

The Big Snowy-Porcupine uplift has been suggested by some† to be caused by large scale faulting in the basal complex, breaking the deep-seated rocks, but bending the shallower strata. Evidence of deep-seated faulting elsewhere in this region is suggested by the Lake Basin-Huntley zone of en echelon faulting. If deep seated faulting has occurred along the south side of the uplift it would seem quite possible that the 2000 or 3000 feet of Paleozoic limestones might also be faulted, whereas the 6000 feet of relatively flexible overlying Mesozoic shales and sandstones responded by bending. Hence it is possible that at depth (in the Paleozoic) the terrace-like Gage dome may be bounded on its northern side by a fault. No positive evidence is

†Thorn, Wm. T., Jr., The relation of deep-seated faults to the surface structural features of central Montana: Am. Assoc. Petrol. Geol. Bull., Vol. 7, pp 1-13, Jan.-Feb., 1923.

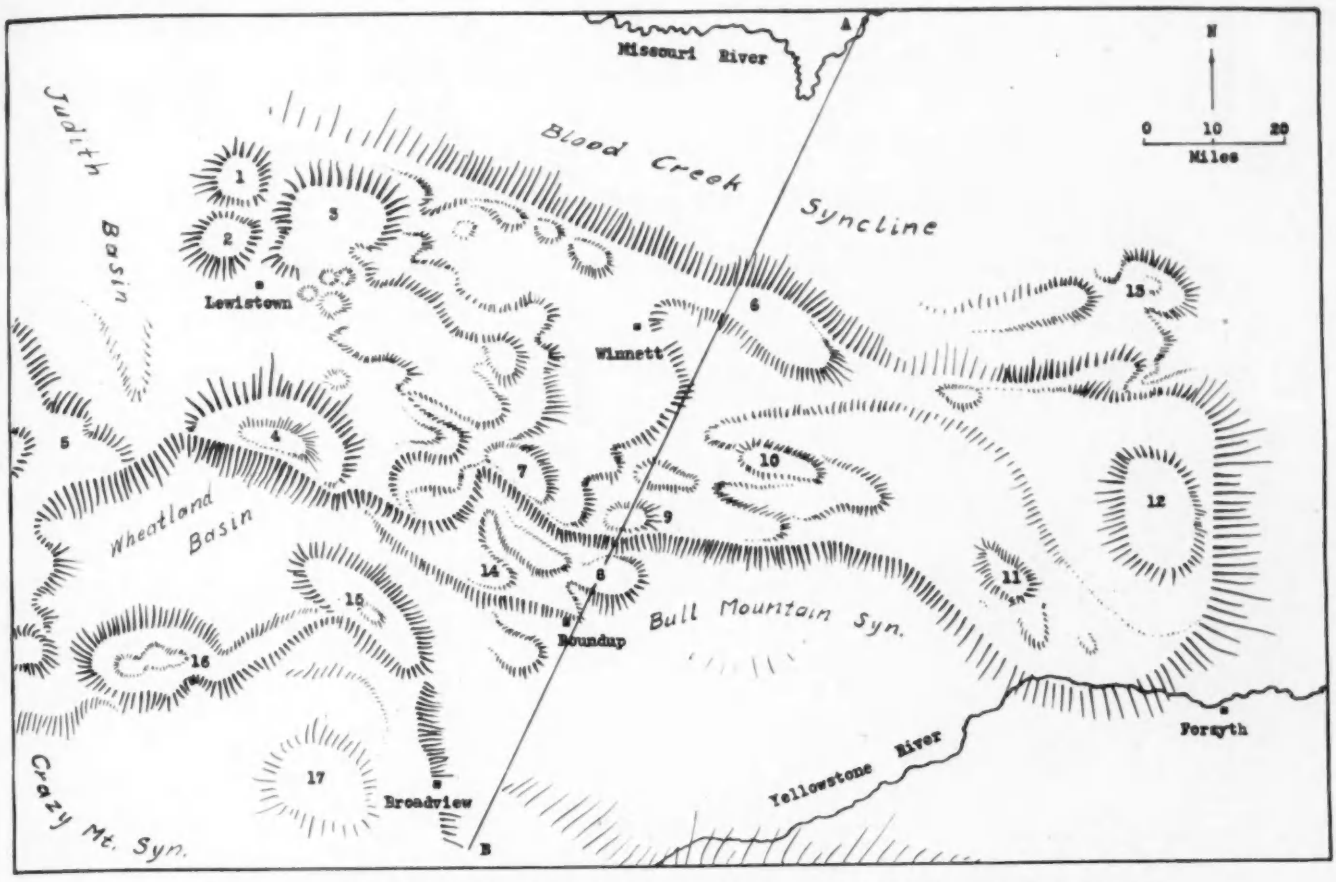
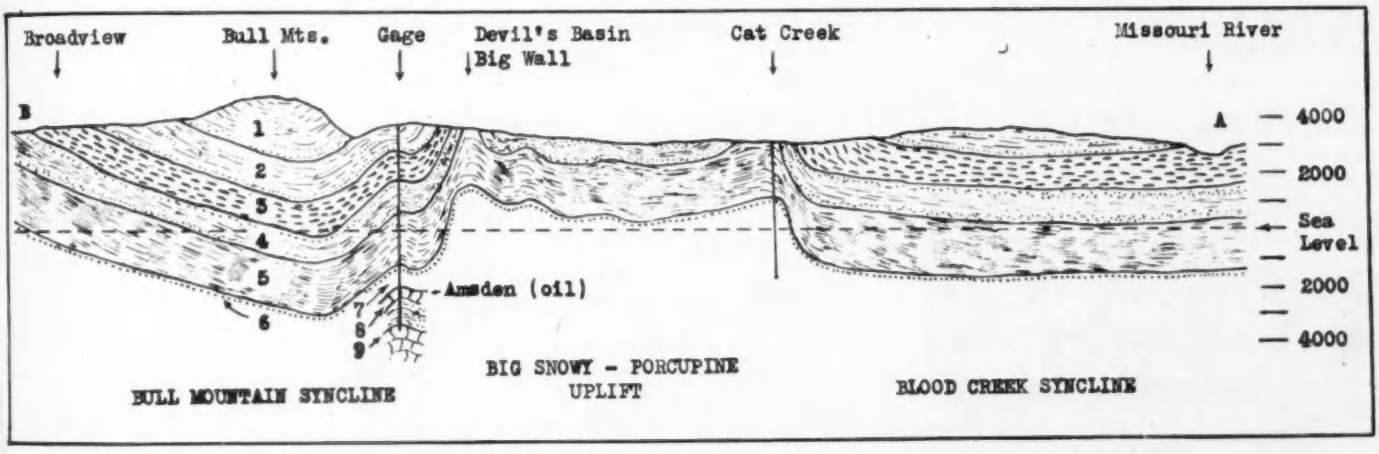


DIAGRAM OF GEOLOGIC STRUCTURE IN CENTRAL MONTANA. BIG SNOWY-PORCUPINE UPLIFT

1 and 2, Moccasin Mountains; 3, Judith Mountains; 4, Big Snowy Mountains; 5, Little Belt Mountains; 6, Cat Creek oil field; 7, Devil's Basin oil field; 8, Gage oil field; 9, Big Wall dome; 10, Ragged Point dome; 11, Ingomar dome; 12, Porcupine dome; 13, Freedom dome; 14, Pole Creek anticline; 15, Woman's Pocket anticline; 16, Shawmut anticline; 17, Broadview dome.



SECTION A-B, GEOLOGIC CROSS-SECTION ACROSS GAGE AND CAT CREEK OIL FIELDS, MONTANA

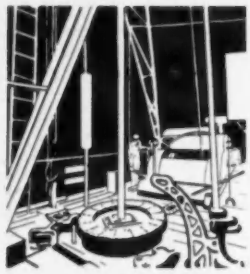
1, Fort Union; 2, Lance (Tullock, Hell Creek, Lennep); 3, Bearpaw; 4, Judith River, Claggett, Eagle; 5, Colorado; 6, Kootenai; 7, Ellis; 8, Amsden; 9, Big Snowy and Madison.

available at present to substantiate such an hypothesis.

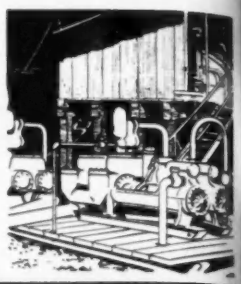
Another possible cause for oil accumulation at Gage is a northward limiting of porosity in the Amsden on the northern flank of the Bull Mountain syncline. However, complimentary to such a stratigraphic condition is the domal structure upon which drilling is now centering. An adequate reason for development (or lack of development) of porosity in the Amsden is not at hand, but it would seem to be related to the extensive erosion surface immediately above this limestone. On the other hand, the erosion surface continues for 50 miles or more northward and westward where porosity in the Amsden has not been observed. Also near the Wyoming line, where Amsden porosity exists, the erosion surface is of little consequence or else lacking. Such speculation brings up all those questions pertaining to porosity development in limestone reservoirs.

Of course Gage dome is the first anticlinal fold outward from the Bull Mountain syncline, but as shown on structural contour maps drainage area toward the syncline is only about 6 miles as compared with several times this amount on other sides of the syncline.

After drilling the several wells now being put down it may be possible to arrive at more definite conclusions concerning the cause of oil accumulation on Gage dome. At present it seems advisable to retain an open mind until additional information is available.



OPERATING HINTS *For Drilling Crews*



$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

Modified Trailer Aids Special Jobs

Model T rear axle and special supporting units permit quick handling of specialized tools.

MATERIALS TRANSFER

Serving numerous useful purposes around the drilling well, a small two-wheel trailer, modified to permit the carrying of special tools, is used to good advantage by one drilling company. The two rear wheels, spring, drive-shaft and housing, and tie-rod assembly were removed from an old automobile. An elevated rack consisting of a length of upturned angle iron and two steel yokes were welded to two upright supports, as illustrated.

Tools requiring special handling such as hole surveying instruments, small fishing tools, pumps, etc., may be laid either on the yokes or on the angle iron tray, then securely clamped to the support by small chain vises mounted at each end. When tools longer than the trailer assembly are to be hauled, a special collar screwed to the end of the tool is used which will permit using the tool itself as the trailer hitch. To the opposite side of this special collar is welded an adapter which will permit its being clamped in a trailer hitch on the rear bumper of the towing car. Collar adapters of this type were made for practically every size tool that might be hauled on this trailer, and are kept in a handy box in the rear of the car.

The trailer is equipped with a small steel toolbox welded to the framework beneath the rack. In it are stored hand tools, chain, and tail-light extension cords and adapters. Registration certificates are permanently protected, yet readily available in a short nipple of 1½-inch pipe welded to the trailer frame. A tight-fitting pipe cap on each end of the receptacle protects papers from injury by the weather.

Air Storage Location Improves Control

AUXILIARY AIR POWER

When the drawworks and other units of a drilling rig are equipped with air controls, location of the air tank can easily affect the time of response of the equipment, and thus have a direct bearing on the cost and efficiency of drilling operations.

By mounting the tank in the substructure, as nearly as convenient below the various points of pressure application, it is possible to take all air leads from the top of the storage unit, and thus to insure dry air with minimum disturbance of any condensation which may have settled out within the tank. Where it is necessary to protect against possible freezing of condensates in the line during cold weather, the sub-structure positioning of the drum permits the layout of the air supply lines with an unbroken incline to the point of use, insuring quick drainage back to the tank of any moisture condensing within the lines.

Where air hoses, for added flexibility, are employed between tank and controls, mounting the storage unit below the floor affords best protection to the hose from oil or grease drips, insures shelter from direct sunlight, and affords overhead cover against dropped tools, swinging pipe and other hazards which menace a floor-level mounting.

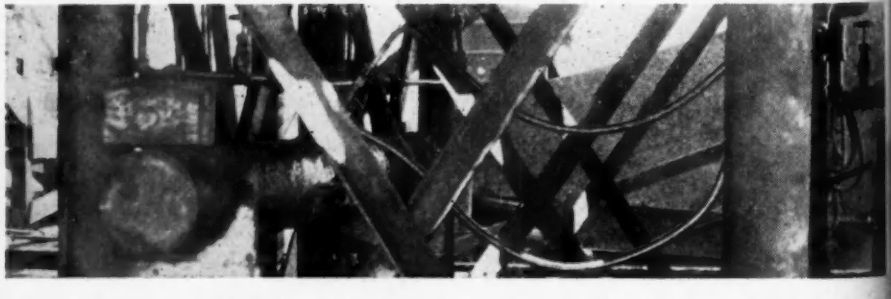
By setting the mounting brackets on adjacent uprights of the substructure, and insuring a gradual slope toward one end of the storage cylinder, removal of condensation is facilitated.

Standpipe Anchorage Snubs Fluid Pound

MUD LINE PROTECTION

Snubbing damaging vibrations in the mud standpipe will do much toward prolonging the useful life of that important part of the rig. Not only does it eliminate cause of leaking fittings and injured supports, but it also prevents transmission of the magnified impulses up to the rotary hose, curbing violent swinging of the hose between the pipe and the swivel.

One superintendent solved this vibration problem inexpensively by building and installing a simple shop-made snubbing device made out of salvaged materials. A length of 4-inch pipe just long enough to span the distance between the standpipe and the derrick leg was modified in the manner illustrated. Four cuts were made in the side of the pipes



Supporting brackets, welded to substructure at convenient working level, accommodate storage tank and permit ready tie-in of leads to various controls actuated by compressed air.

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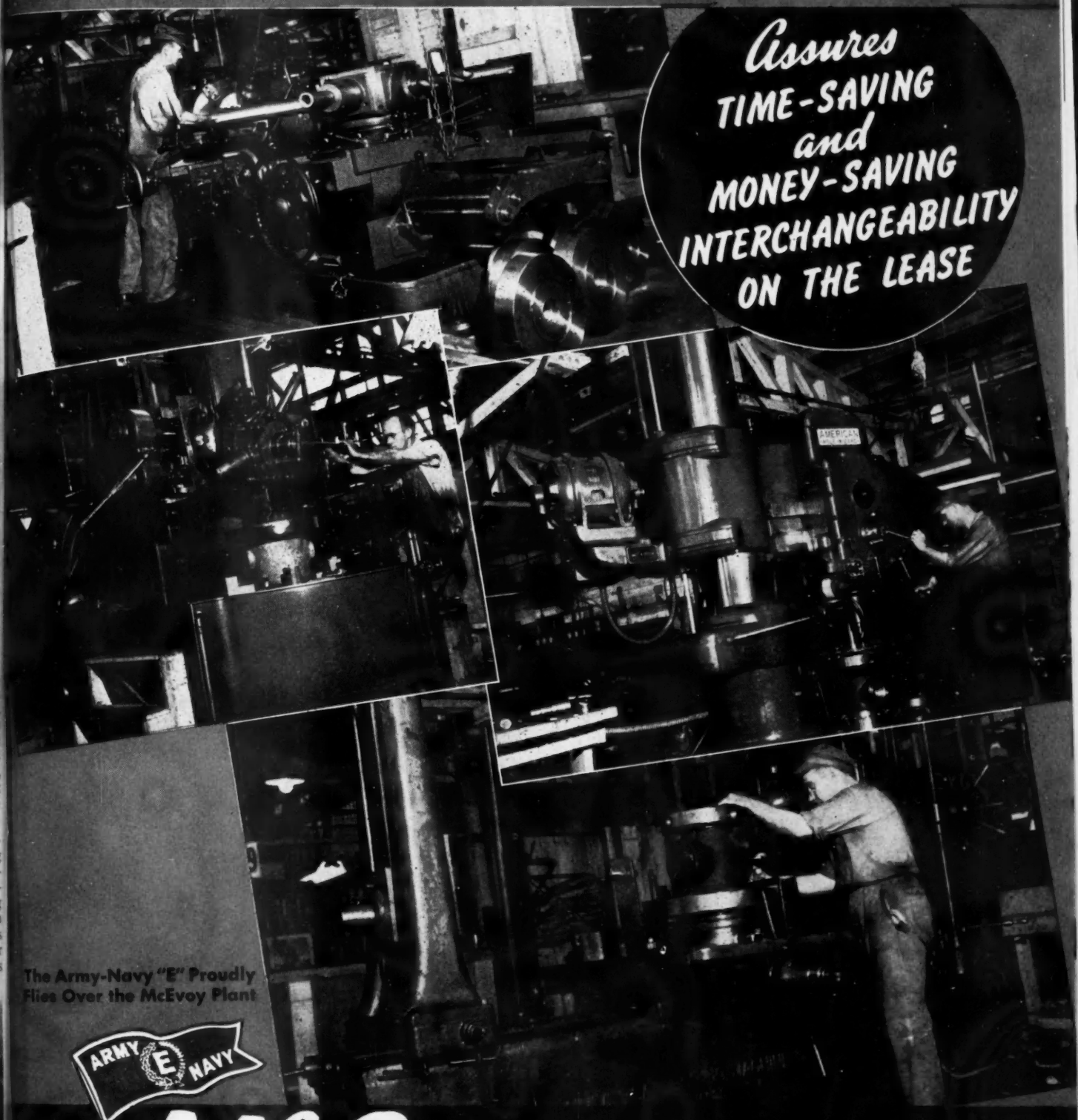

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TEXAS AT MILBY

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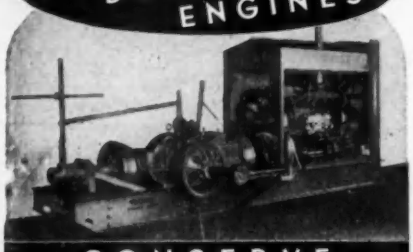

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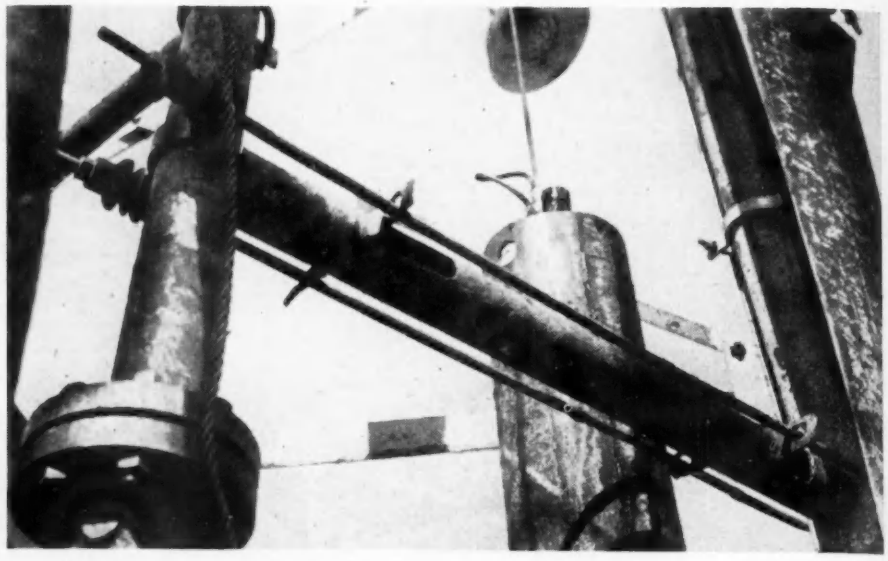
with cutting torch, and the tongues of metal thus formed were pulled out normal to the surface, perforated with a round hole, and used as supports and guides for two lengths of sucker rod material. Steel yokes accommodating the diameter of the standpipe and derrick member were then slipped over the threaded ends of the sucker rod lengths and tightened down firmly.

Advantages of this type of snubbing device include simplicity of building, availability of salvaged materials and lightness of construction—the latter permitting quick dismantling and reassembly at each new location.



Preventing the whip and nodal vibration concentration sometimes appearing in mud lines, this relatively light but effective spacer and snubber effectively locates standpipe.

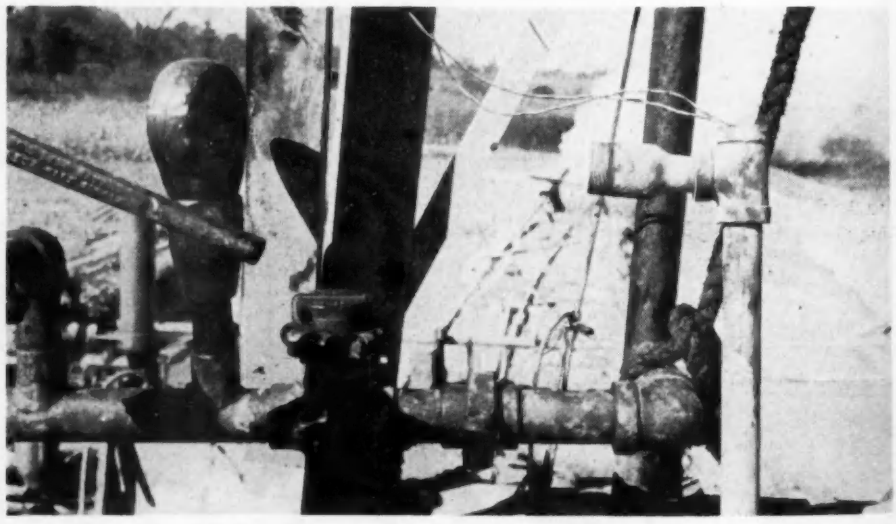
Swage Nipple Guard Safeguards Gauge Lamp

IMPROVED LIGHTING

Spotting a light on the mud pressure gauge is necessary if the glare from it is not to interfere with the driller's vision, and also to protect the light from possible mud splattering when coming out of the hole. Mud or wash water, on the hot bulb of a lamp, usually means a replacement, and may even cause a short circuit which will blow a fuse and put the entire rig in darkness.

One driller mounts the gauge light in a socket carried in the side outlet of a tee, setting this latter on a pipe standard at the edge of the derrick floor. After a bulb of the desired size is screwed into the socket, a swage nipple to fit the tee outlet and enclose the bulb is screwed into place, enclosing the bulb on all sides, and permitting light from the open end to illuminate only a small circle, the center of which is the mud gauge.

Where wiring circuits are carried below the working floor, the wires for this lamp may be tied in to these circuits as are other lights, while if wiring harness is strung above the floor, a drop pair entering through the open top of the tee provides current for the light.



A pipe post, equipped with Tee side outlet directed toward mud pressure gauge, carries bulb well guarded by swage, while light is closely centered and glare eliminated.

New Roads to Oil-Producing Areas of Peru

Development expected to be intensified as soon as links across the Andes to river ports finished

THE great prospective petroliferous belt along the eastern flanks of the Andes, including most of the region of jungle and plains at the headwaters of the Amazon, will soon be accessible for limited development as a result of an extensive program of highway construction now being carried on by the government of Peru.

Three main highways, extending from Pacific ports on the southern, central and northern portions of the coast, will traverse the entire width of the Andean mountain region and terminate at river ports on the other side. Two of the river ports are within the limits of boat service on the Amazon and one of its widest tributaries.

Completion of the new connecting highways will provide all-weather trunk lines for transportation of equipment and personnel to the previously isolated areas, and will represent the main stems from which other branching routes will sprout in the future, as development of resources of the interior progresses.

Map of Peru showing new highway arteries

Southernmost Highway

Mollendo, the principal port of the Department of Arequipa, is the western terminus of the excellent highway through the mountains to Lake Titicaca. From there it runs for 250 miles down the Urubamba valley, as far as Santa Ana, passing through Cuzco. At Urcos, 25 miles below Cuzco, a new branch highway was started in March, over a pass in the Cordillera Oriental and on down the valleys of the Marcapata and Inambari rivers to Maldonado, on the Madre de Dios River. This road will open up a considerable stretch of territory in the southeastern part of the country adjacent to Bolivia.

From Lima and its port of Callao another existing highway crosses the Cordillera Maritima, turns northward up the valley of the Rio Huallaga, and parallels the railroad line as far as Cerro de Pasco, then northward through the gorge to Tingo Maria. It has been completed to that point. From there it has been put through the foothills region in a northeast direction to Pucallpa on the Rio Ucayali, but has not yet been finished for year-round use. This is near the Ganzo Azul (Blue Goose) oil field, which heretofore has been dependent upon air transport or a 2800-mile boat trip up the Amazon River. It is planned to complete the gravel surfacing of this stretch before the end of this year. River steamer service is available at Pucallpa, connecting with Iquitos and the Amazon proper. Since the Ucayali is navigable for some distance upstream from Pucallpa (southward) the road from Lima across the mountains will give access to approximately 600 miles of territory in the Montana region.

The most northern of the three new highway routes, when completed, will extend from the Pacific port of Chiclayo to Puerto Manuel Prado, on the Rio Maranon—the geographical extension of the Amazon that flows northward along the west side of the central range of the Andes. From Puerto Manuel Prado the road will follow the course of the river through the mountain ranges lying to the east, and probably will terminate at Limon, where the eastern foothills merge with the swamplands and jungles of the Lorento region. From Limon eastward sizeable river craft can navigate the Amazon headwaters.

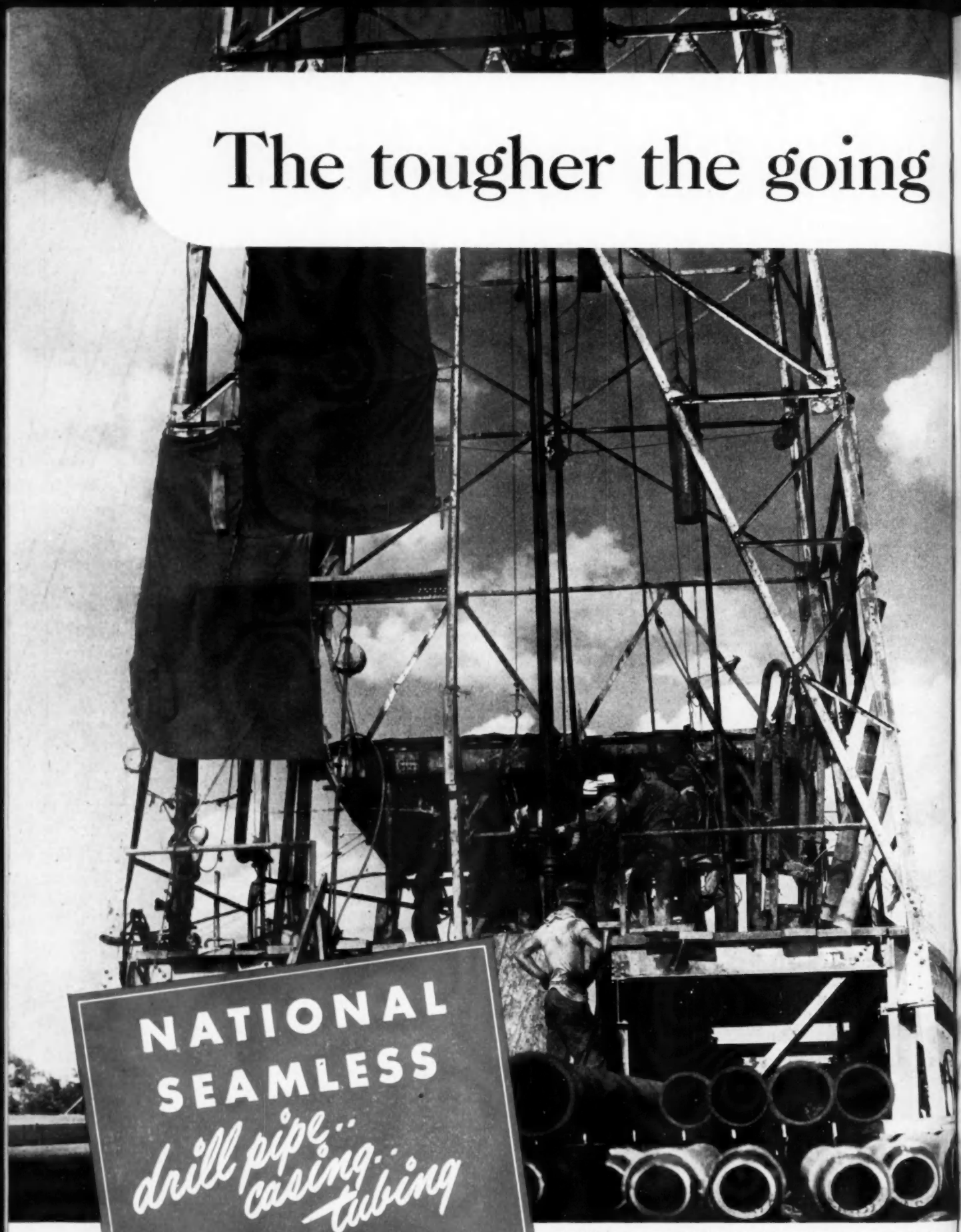
An all-weather section is complete from Chiclayo to Olmos, and work has reached an advanced stage along the stretch between Olmos and Bellavista. Surveys have been completed for all three of the new highway projects, construction trails have been put through, and work has been started on the required bridges. It is expected that the roads will be open for heavy traffic across the Andes by the summer of 1945.

Peruvian officials regard the building of the central highway, from Callao (near Lima) to Pucallpa, as the most important of the three projects, from the standpoints of engineering accomplishment and economic importance. This route provides a direct connection between Peru's principal seaport and the interior of Brazil and the Atlantic Ocean.

By the new highway and river steamer route goods and supplies can be delivered at Iquitos within five days after leaving Callao. Formerly, the overland mule trip required 30 days or more.

Minister of Public Highways and Development, Carlos Moreyra Paz Soldan, has emphasized the difficulties and obstacles that have been overcome in bringing this single project to virtual completion. He points out that more than 500,000 trees were felled in clearing the route, more than 13 million cubic yards of earth and rock were removed from mountainsides, and nearly 400,000 truckloads of crushed rock and gravel applied to the new road surface. Total footage of tunnels amounts to 1150 feet, and in addition, the numerous bridges along the route add up to a combined length of some 6500 feet.

The tougher the going



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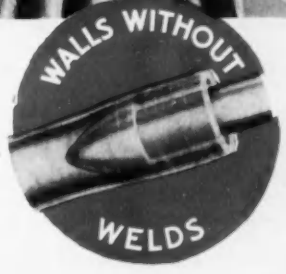

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Manpower

■ CONTINUED FROM PAGE 16

discovering and encouraging the adoption of good manpower utilization practices and will aid in removing obstacles in the way of fuller utilization of workers."

The committee will work through trade associations and trade publications in procuring case histories of tried and proven changes and methods that have accomplished a saving of manpower.

Arkansas Report Shows Benefit of Conservation

Alec M. Crowell, director of the Arkansas Oil and Gas Commission, in his quarterly report to the commission, stated recently that the 32 oil and gas fields operating under state control in Arkansas are in excellent condition. He pointed with particular emphasis to Midway, Lafayette County, Village, Columbia County, and Schuler-Jones, Union County. In these three pools he estimated that the commission's system of optimum rate proration will result in an added recovery of oil exceeding 87 million barrels.

He said Midway is the only deep limestone pool being repressured with fresh water in the world. Fresh water is being injected from specially drilled water wells into the oil producing horizon at 6340 feet. Over the first six months of this year 1¼ million barrels of oil were removed from the reservoir and yet the reservoir pressure was increased by 29 pounds. He estimated that the ultimate recovery from Midway would be increased from 32 million barrels to 65 million barrels.

Relying only on scientific curtailment, the Village pool withdrew one quarter million barrels of oil from 7390 feet with a pressure increase of 2 pounds during the first six months of the year. The only source of pressure replenishment is the natural water drive. He estimated that if the system of proration now in use is continued, the ultimate recovery will be increased from 4 million to 24 million barrels.

Schuler-Jones, which is being repressured with gas at 7503 feet, produced 2 million barrels of oil without change in pressure. This was the first pool in Arkansas to be unitized and pressure maintenance attempted. He said that the ultimate recovery of this pool would be increased from an original estimate of 36 million barrels to a recovery of 56 million barrels.

The report stated further that the present plan to maintain pressure in the Magnolia field, Columbia County, where production is found at 7350 feet, should result in perhaps as much added oil as all of the present pressure-maintenance programs of the state represent. Magnolia is the state's largest field, having an original reserve of over 200 million barrels. All of the operators in the field with one exception have agreed to drill input wells around the edge of the reservoir and inject fresh water, as is being done at Midway.

HENRY A. MOREAU became associated with the firm Samuel P. Card & Associates on July 1 and the group of industrial engineering consultants will continue under the name of Card, Moreau & Associates with offices in Southwestern Life Building, Dallas.

Davies Urges California Take Steps To Start Developing Offshore Areas

Faced with demand for more oil as our military operations in the Pacific theatre expand, PAW officials are studying the possibilities of increasing production and transportation facilities to insure an adequate flow of war productions when the center of hostilities swings from the east to the west.

With California production now at an all-time peak, it has been necessary to draw heavily on local crude stocks in order to meet requirements, and those stocks are approaching minimum safe working levels and additional crude supplies must be provided promptly if refinery operations are to proceed as scheduled.

Several possibilities are being explored, but definite action has been taken in only one instance — the development of additional production from Elk Hills which, however, will not provide all the additional oil necessary.

It was pointed out by Administrator Ickes July 27 that no new sources of supply have been discovered in California for a good many years, and that the Navy's action to expand Elk Hills output was taken only after a great deal of persuasive effort. It was disclosed that a proposal has been submitted to ship 30,000 to 40,000 barrels daily of West Texas sour oil to the West Coast by tank car, but no decision has been reached.

Offshore Exploration

The most promising possibilities of increasing West Coast production are seen in the further development of the under-water deposits in the Los Angeles Basin area and along the Santa Monica Bay shore, and action toward that end has been asked of the California state lands commission by Deputy Administrator Davies, who on July 27 was informed that the matter would be brought up at the next meeting of the commission.

"The over-all stringency of petroleum supply and of petroleum transportation makes exceedingly difficult any plan for meeting the West Coast petroleum deficit through importations of crude oil from other parts of the United States or elsewhere," Davies told the commission. "Accordingly, it is highly urgent that all possible steps be taken to find and develop new petroleum reserves and productive capacity in California."

Davies called attention to the fact that in spite of a greatly expanded program of geophysical and geological surveying and of exploratory drilling, no major oil field has been discovered in the state since 1938, but, he added, "Our attention has been directed to the existence of structures which appear favorable for oil occurrence under tidelands off the coast of California.

"There is a particularly well-defined structural trend in the Los Angeles Basin area extending from the important Torrance and Wilmington fields in a southeasterly direction and joining with the Huntington Beach field and extending perhaps as far as Newport Beach," he said. "Similar excellent possibilities lie along the Santa Monica Bay shore line and immediately off the coast in Santa Barbara and Ventura Counties."

Amendments Likely

Test and development of these structures by directional drilling from the uplands which would not endanger the beaches nor interfere with navigation or fishing was used as long ago as last October, but without result, he pointed out.

Davies conceded that it might be necessary to amend existing state laws in order to permit the full development of these possible new sources of supply, but urged strongly that no time be lost in setting in motion such activities as require no legislation and seek necessary amendments of the laws from the state legislature as soon as possible.

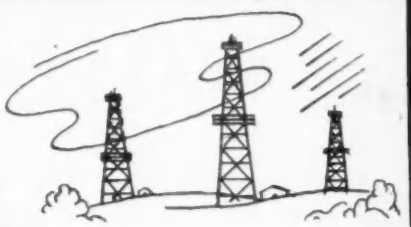
Apparently hopeful that the state authorities and the industry would voluntarily undertake the development of the offshore deposits, Davies made no mention in his letter of the fight which was waged over a long period some years ago to have title to the offshore lands vested in the federal government.

Instead, he sought soberly to impress upon members of the commission the serious situation which will develop unless every possible barrel of California oil is brought into production.

"The situation as respects crude oil supplies in California has become so critical that only recently the Congress of the United States authorized the Navy Department to develop and produce the Elk Hills naval oil reserve," Davies pointed out. "The prospective demands for oil to wage the war in the Pacific are necessarily so enormous that even the development of the Elk Hills coupled with the sum total of all production which we may reasonably expect from known fields in California still leave us short of adequate supplies to sustain our military forces without drastic and increasingly severe civilian rationing.

"We are, therefore, compelled again to reiterate the position taken with your commission last fall in our letter of October 19 and urge even more strongly that the commission take every action possible within the full limits of existing statutes and seek appropriate amendments to those statutes that may be necessary for still further development of offshore oil pools by that type of directional drilling which has proved so successful over the past ten years."

F. W. BRUNER, production superintendent of The Carter Oil Company's Eastern division since December, 1942, has been transferred from Mattoon, Illinois, to Billings, Montana, as acting manager of the Northwest division, to replace J. R. McWilliams who is on leave as director of the production division of PAW. R. J. Sullivan, assistant division superintendent and division engineer, has been named acting division superintendent to replace Bruner in Mattoon. O. D. Harper, district superintendent at Carmi, Illinois, is being transferred to Mattoon to serve as acting assistant division superintendent.



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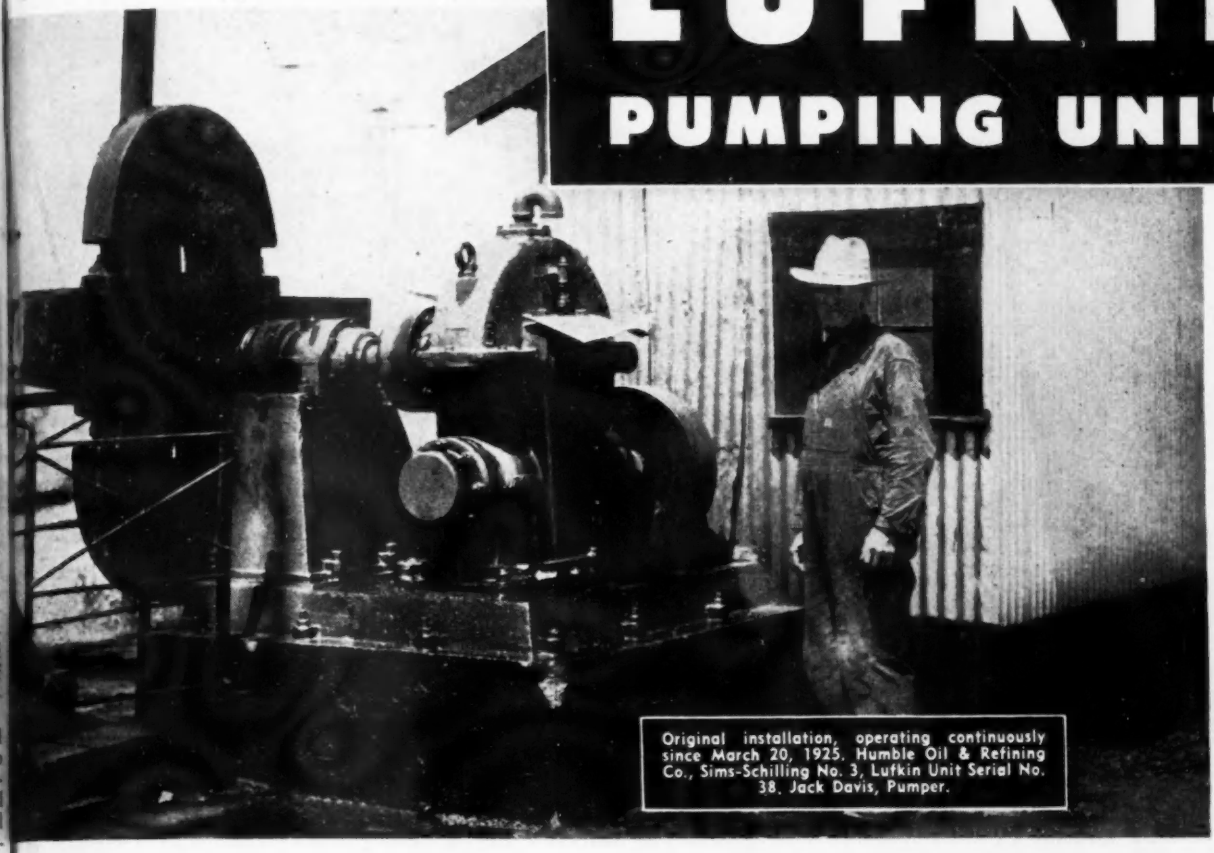

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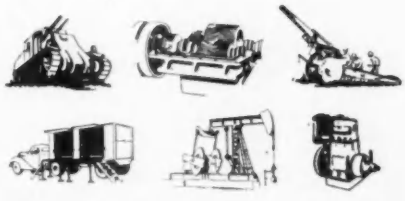

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Truck Tire Shortage is Threat to Nation's Oil Production

Tight situation is getting tighter as military demands for motor equipment increases and allotment for oil field and market trucks is curtailed. Situation may improve by autumn but be worse before

By A. R. McTEE, Staff Writer

BEFORE the very bad trucking situation now prevailing in practically the whole oil industry gets any better, it is almost certain to get worse. It is the general consensus that the next two and a half months are due to see even tighter conditions in transportation by trucks than have yet been encountered, brought about by the spiralling military demands for motor equipment. The severe difficulties under which all trucking companies have been struggling to try to get along, were climaxed recently when ODT announced the extreme shortage of tires for large and medium sized trucks. Allotments of tires in all districts have been far below requirements for some time, August quotas have been slashed sharply, and the new announcement finds many vehicles literally "on the rim."

In Oklahoma, a report says the shortage of tires that has developed since D-Day is seriously handicapping operators and that unless relief is granted, many heavy trucks will have to be taken off the highways within the next 30 days.

Will Present Report

One company there reports 90 percent of its trucks are running on "tires which are practically rags and ribbons," and many will have to be taken out of operation unless new tires are allocated shortly.

W. H. Esser, head of the transportation division of Shell Oil Company, at Tulsa, and chairman of the ODT maintenance advisory committee, pointed out that only 155 large tires have been allocated in the Tulsa district to be shared among 7500 trucks which includes oil company and other carrier vehicles.

Oil companies are making a day-to-day report on tires now in use and it is planned to present this factual data to WPB soon in an effort to have tires allocated to the industry, if possible.

Esser stated that "While oil companies have re-capped and repaired tires continuously, the time is fast approaching when such tires will no longer give any service and many trucks will have to remain in the garage." He added that tires are now the critical item in oil-field transportation, and suggested that oil companies gather as much factual information as possible to use in trying to secure higher allotments of tires from WPB. The Army needed 88 percent of the 140,000 tires allocated for August.

The immediate tire shortages in District 3 are possibly not quite as pronounced as in Oklahoma. However, a canvass of trucking concerns in Houston, indicates that if no new tires are available, trucks will be dropping out of operation from now on. Already, a few were reported as tied up because no tires could be found.

Speaking for the whole industry, William R. Boyd, Jr., chairman of Petroleum Industry War Council declared recently that "Prompt allocation by the federal government of a sufficient number of heavy-duty truck tires is the only means of avoiding this danger now in sight for an oil truck transportation situation that is impaired now and disintegrating daily."

Threat to Military

Boyd disclosed that "Shortages of petroleum and its products for Allied invasion forces or American farmers, or both, hang in the balance because lack of heavy duty tires threatens to cripple seriously deliveries by tank trucks of gas and oil essentials for military movements and vital food production on the home front."

Thus the threat extends far beyond the production branch of the industry.

Imminence of the breakdown in petroleum truck transportation prompted PIWC to present a formal resolution to the Petroleum Administrator for War, as follows:

"The prompt supplying of truck tires for petroleum transports is essential and something must be done without delay to prevent serious interferences with supplying the military and agricultural demand or rationed civilian requirements. The Petroleum Administrator for War is requested to inform the proper officials of the United States Army, War Production Board, office of rubber director, Office of Defense Transportation and Office of Price Administration of this serious situation and request them to allocate promptly a sufficient quantity of heavy duty truck transport tires not only to get the units now out of operation into service but to prevent further disintegration of the petroleum transport situation."

Boyd further cited that prolonged and severe shortage of heavy truck tires makes impossible the continuance of new exploration operations and oil well developments at a pace necessary to meet the demands of expanding military requirements. "This can only be accomplished," he said, "by continuing the flow of materials increasing the supply of heavy duty trucks and tires, as well as drill pipe, tool joints, engines and heavy drilling equipment."

The truck tire shortage is due, according to J. E. Powers, manager of the truck and bus tire department of The B. F. Goodrich Company, to several reasons: Like many manufacturing industries, the tire companies are handicapped by a serious shortage in skilled workmen. This shortage exists not only in the rubber industry, but also in the chemical, petroleum and textile branches as well, all of which are closely allied to synthetic rubber manufacturing. Women who are now engaged in making passenger tires, are not strong enough to make the large truck tires.

Also, in spite of the enormous manufacturing program, there is still not enough synthetic rubber, rayon, and other textiles, including certain chemicals.

Likewise, the military demand for tires has exceeded expectations and is changing constantly. The army is dependent upon truck transportation for a great part of its supplies on all fronts, in addition to the almost fabulous number of big tires for motorized weapons. Expanding use of the new B-29 bombers has also brought unexpected demands for large tires. Ordinary bombers also require large tires, and many a bomber plane has to have more than one complete set of replacement tires per month. Manufacturers state that while they are building one 56-inch airplane tire, the popular size for bombers, they could be making seven 8.25-20 truck tires.

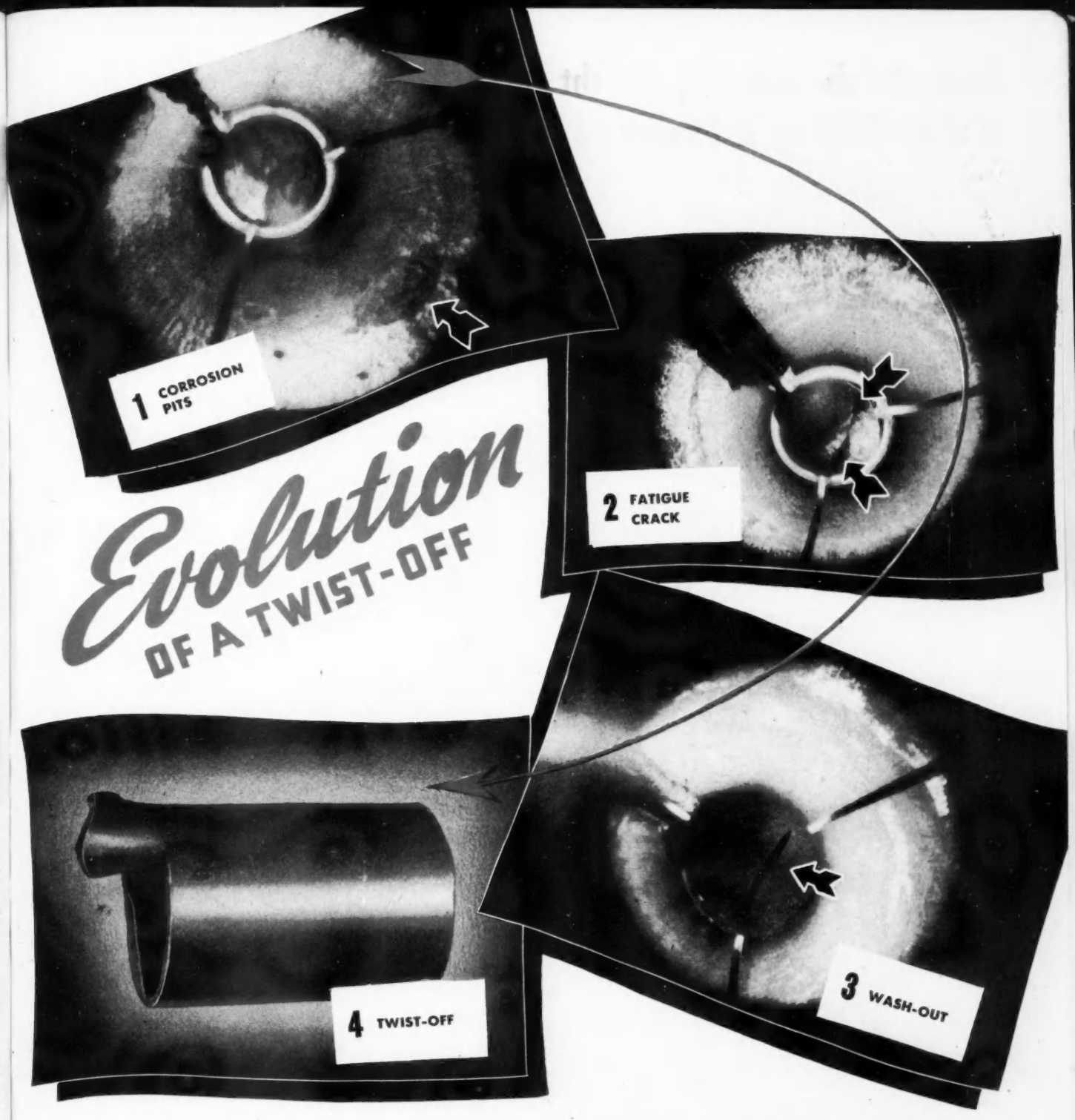
Slow With Synthetic

Still another reason for the shortage is the longer time required for milling or mixing operations in connection with synthetic rubber manufacture.

All tire manufacturers are working under a government pattern. Classifications are "small," "medium," "large," "airplane," "combat," etc. The percentage of production that must go to military uses is specified by the government, and what is left is allocated for indirect military or essential civilian use.

Of the most serious shortage, sizes 9.00 through 14.00, one half the total number made must be used to fill military needs. The popular highway truck falls within these sizes.

Manufacturers see July, August and September as the most difficult months for users of big truck tires. During this period the military requirements can be counted on to spiral upward. Also the hot months of summer take a heavy toll of tires in ordinary traffic. Through the last quarter of the year, the situation should improve. By that time, the $75,000,000 expansion program in the rubber industry should be far enough along to allow increased production of tires, with medium and heavy-duty trucks getting their quota.



Evolution OF A TWIST-OFF

Presented above is an authentic series of photographs illustrating the sequence of developments of one common type of drill pipe failure. The first three of these unusual photographs of different sections of drill pipe were made thru a TUBOSCOPE instrument and clearly shows: (1) Corrosion pits on the internal wall of a joint of drill pipe which looked, from external appearance, as sound as a dollar. (2) A small but, nevertheless, dangerous fatigue crack caused by constant stress concentration at the base of two "notch type" corrosion pits. In this instance the fatigue crack has already joined the two pits. (3) A wash-out which resulted when progressive fracture, starting from a small fatigue crack, continued until the effective wall section became seriously reduced and failed spontaneously, allowing the drilling mud to escape thru the crack and wash a hole in the pipe body. (4) A twist-off at the point of a wash-out which had weakened the drill pipe.

One or all of these stages of failure may be found in a string of drill pipe after drilling even a single average-depth well. But the unsuspecting drilling crew is not aware of their presence until it is too late to avert a failure and, perhaps, a costly fishing job. Only TUBOSCOPE, the modern scientific tubular inspection service, can reveal such hidden weak points in drill pipe. Join the safety-conscious operators who TUBOSCOPE their drill pipe *regularly* and watch *your* fishing jobs decrease.

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Oklahoma City, Oklahoma
Great Bend, Kansas

Enlarged Membership to be Sought by IPAA; Subsidy is Explained by Eaken

Agreeing that the number one problem confronting the oil industry now is that of supplying all the petroleum needed to carry on the war, state vice-presidents and the executive committee of the Independent Petroleum Association of America considered the part of independent operators in this program, at a two-day meeting in Fort Worth, Texas, last week. Chief among the topics heard was a discussion of the subsidy recently authorized by OPA, which becomes effective August 1. Robert Eaken, head of the research section of the petroleum branch of OPA, outlined subsidy regulations and plans of administration.

In commenting on the subsidy, Ralph Zook, president of the Association, said that Eaken's discussion "was helpful to our group and I am sure it was helpful to OPA. The main concern of the oil industry," Zook continued, "today, is to provide enough oil to win the war. The subsidy payments for wells of small production to be inaugurated August 1 will help many operators of marginal wells but it will not answer the problem of more oil. The answer is an overall price increase. The independents' fight for an increase has been just and this association is determined to fight with more vigor than ever before for this just cause. The independents' prediction that under a depressed price the flow of producable oil would reach its maximum capacity is now a reality."

Zook included a number of other issues in his remarks. "Ever now and then," he said, "a question that seems remote becomes current quickly. There are several such issues now visible. One is imports of oil. It is no problem now but it might suddenly become an acute one with the end of the war. We are trying to look ahead on this. Another is that hardy perennial, the depletion allowance. This is the first year in several recent ones that we have not had to spend a great deal of time presenting the case to congressional committees and even this year there were hints that it would come up again."

A standing committee was authorized to promote closer cooperation between the producer and drilling contractor. Also a committee was authorized to study the feasibility and application of a permanent differential for wells of small production. An enlarged membership program was suggested and steps will be taken to increase membership in the association within the next few weeks.

In compliance with requests from the Office of Defense Transportation to limit all unnecessary travel, the association has decided that in lieu of the regularly scheduled annual meeting for October 23, 24 and 25, instead there will be only a directors meeting, in Dallas, Texas, October 9, 10 and 11.

Representatives from 14 states attended the meeting in Fort Worth.

Staff Named to Conduct Research of High Pressure Condensate Corrosion

In a coordinated effort to combat the serious corrosion being encountered in the pipe and fittings of high-pressure condensate wells, the Natural Gasoline Association of America is sponsoring a cooperative research program having as its objective the determination of the causes and means of eliminating this corrosion.

Major portion of the research program has been placed with the staff of Battelle Memorial Institute, Columbus, Ohio, where Dr. H. A. Pray will conduct and supervise laboratory studies concerned with the metallurgical and chemical problems involved. Dr. Pray has just completed a tour of condensate-producing areas in Texas and Louisiana where he observed the serious effects of corrosion and discussed with technical men the various efforts already made to combat it.

Supplementing the work at Battelle Memorial Institute, it is planned to have full-scale experiments carried on in the field by the staff of some Southwestern institution as yet unselected. It is felt that this broad approach to the problems through both laboratory and field studies by independent agencies whose data and activities are correlated and supervised by a central research project committee will give the most comprehensive results in the shortest time. This committee will also serve as a clearinghouse for corrosion-research data developed by individual companies and has arranged for cooperative exchange of information with the United States Bureau of Mines and the American Petroleum Institute.

It is expected the project will be continued for at least three years because the type of corrosion being studied is particularly baffling and presents some new and exceedingly complex problems. The annual budget of $20,000 is being raised by subscription among interested companies. T. S. Bacon, director of research, Lone Star Producing Company, Dallas, is chairman of the corrosion research project committee.

In commenting on the growing seriousness of this corrosion, Bacon said it was difficult to overemphasize its destructive effects: "Occurring as it does in high-pressure wells, most of which range in depth from 7000 to 10,000 or more feet, there is an unusual hazard. Serious corrosion was initially discovered in the Opelika field in 1942 and was first thought to be peculiar to that field. Since that time, however, it has been found in a number of other condensate fields and the industry is faced with a really menacing problem.

"The corrosion is all internal and cannot be observed except by teardown inspection. It is not continuous throughout the well fittings but is spotted at unexpected locations in the surface connections or may appear 400 feet down the tubing. In some cases destruction of a Christmas tree has been so rapid, replacement has been necessary within 90 days while in others the corrosion has been at a much slower rate. Repairs on some wells where the tubing has failed because of corrosion near the top have cost from $50,000 to $70,000 per well. With these facts in mind, it is rather easy to understand why the industry is so interested in discovering the cause and cure for this expensive and very disturbing element in its operations."

Bacon's discussion of "Corrosion of High-Pressure Gas Production Equipment" appeared in THE OIL WEEKLY, June 19, 1944.

Arkansas Will Vote on Higher Oil Severance Tax

A bill to be voted on in Arkansas, at the November general election, increases the severance tax on crude oil, and also places a tax on distillate and natural and casinghead gasoline. The bill is under the title of "Hollingsworth State Hospital System Act."

The section on petroleum and crude oil outlines the tax as follows: Below 22 gravity, 5 cents per barrel of 42 gallons; 22-28 gravity, 6 cents; 28-31 gravity, 6½ cents; 31-32 gravity, 7 cents; 32-36 gravity, 8½ cents; 36-43 gravity, 9½ cents; above 43 gravity, 10 cents. "On distillate, condensate or similar natural resources (but not including natural gasoline) severed from the soil or water either with oil or gas, 10 cents per barrel. On natural gasoilne and casinghead gasoline from the soil and water either with oil or gas, 15 cents per barrel."

Rules Promulgated for West Edmond Hunton Lime

Oklahoma Corporation Commission has issued regulations for the West Edmond Hunton lime pool which requires 40-acre spacing with wells located as near the center of the 40 as possible.

At least 300 feet of surface casing is to be set and cemented, and a flow string set not higher than the top of the producing formation and cemented to a point not less than 2700 feet above the casing shoe, said flow string to test at least 2800 pounds. Each well is to be tubed with not to exceed 2½-inch tubing and all production shall be through tubing which shall be set not lower than the top of the producing formation and plugged at bottom and lowest joint perforated. Well connections must test not less than 3000 pounds.

The order establishes a 2000-1 oil/gas ratio and producers must run production tests at least every 90 days under the supervision of a representative of the conservation department.

F. E. REHM, manager of industrial relations and personnel for Shell Oil Company at San Francisco, has been elected a vice-president and will continue his present duties. Rehm joined the company after graduation from Stanford in 1915, worked up through the production department, and was manager of that department when transferred to industrial relations in 1938.

Fuel Oils Added to Stocks as Runs To Stills and Crude Output Expand

The industry boosted crude production to a new all-time high in the week ended July 22 and materially stepped up crude runs to stills over the previous week, with the result that production of each of the major products increased. The week's operations had favorable effect on inventories of both crude and refined oils.

The former sharp decline in crude stocks was arrested in the week ended July 15, when a small addition occurred, although the July 22 week may have brought some further draft on crude storage, with refinery runs up more sharply than crude production. Gasoline stocks were drawn upon comparatively lightly in the week of July 22, following a heavy draft the week before, although stocks normally are declining materially at this season. Stocks of gas oil and distillate fuel oil were increased, as customary for the season, in the week of July 22, and there was a large addition to stocks of residual fuel oil, improving the inventory situation for this important product.

United States crude production of 4,615,000 barrels daily for the July 22 week, the new record, was 13,000 up from the previous week and almost 500,000 daily or 12 percent above the 4,119,000 barrels of production in the week ended July 24 last year. Crude runs to stills averaged 4,684,000 barrels daily, up 109,000 from the week before and 730,000 daily or 18.5 percent above the 3,954,000 daily a year previously. Crude oil stocks totaled 226,513,000 barrels on July 15, up 89,000 from a week before but about 11,000,000 barrels or 4.6 percent under the 237,440,000 barrels on hand July 24 last year.

Production of gasoline averaged 2,035,000 barrels daily, including natural blended at refineries, and was 23,000 a day above the week before and 411,000 barrels daily or 25.3 percent higher than in the corresponding week last year. Stocks of finished and unfinished gasoline were lowered 15,000 barrels daily to 82,150,000 barrels, but the latter amount was nearly 8,000,000 barrels or 10.5 percent more than the 74,356,000 barrels on hand July 24, 1943.

Gas oil and distillate fuel oil production was increased 33,000 barrels a day above the previous week and averaged 725,000 daily, which was 197,000 daily or 37.3 percent more than production in the like week a year previously. Stocks of these oils were accumulated at the rate of 49,000 barrels daily and rose to 37,513,000 barrels on July 22, up 3,650,000 barrels or 10.8 percent from a year previously.

Residual fuel oil production averaged 1,278,000 barrels daily, up 51,000 from the week before and 88,000 a day or 7.4 percent above output in the like week last year. Stocks were increased at the rate of 140,000 barrels daily and rose to 55,315,000 barrels, but still were 11,846,000 barrels or 17.6 percent under the trend for last year.

Oklahoma Commission Tops PAW August Allowable

Daily production of crude oil and natural gasoline during August and September in Oklahoma has been set at 367,000 barrels, by the corporation commission. Of this amount, 340,000 barrels is crude oil with 27,000 barrels of natural gasoline for August, and 27,500 barrels for September. PAW recommendations for the same period are 359,000 barrels, 332,000 barrels of oil and 27,000 barrels of natural gasoline.

The commission added East Pauls Valley, Garvin County, and Northeast Arcadia, of Oklahoma County, to the list of restricted fields. Production for West Edmond was set at 20,000 barrels daily in August and 23,000 barrels in September.

Louisiana Allowable Set

The minerals division of the Louisiana conservation department set the state oil allowable at 393,117 barrels daily during August, less than 4000 barrels increase over the July figure of 389,224 barrels.

New allowables by districts were: Houma 62,895, Lafayette 107,597, Lake Charles 67,947, New Orleans 78,066, Monroe 33,159, and Shreveport 43,453 barrels.

Larger field allowables include: Erath 17,335, Iowa 10,105, Lafitte 12,479, Ville Platte 10,488 and Nebo-Hemphill 10,984 barrels.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gasoil and Distillate Stocks Barrels	Gasoil and Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1941	4,337	11–22	4,120	10–18	266,187	3–29	99,727	3–29	[1]54,983	11–15	102,448	1– 4
1942	4,337	2– 7	3,961	1– 3	263,208	3–28	[1]109,281	3–14	49,861	11–14	95,857	1– 3
1943	4,436	11–13	4,331	12– 4	245,752	5–29	94,159	3–20	46,187	11–27	72,881	1– 2
1944	[1]4,615	7–22	[1]4,752	6–17	240,992	1– 1	89,162	4– 1	42,310	1– 1	57,330	1– 1
Lows:												
1939	[2]1,601	8–26	3,125	2–18	[2]229,127	10–12	71,152	10– 7	20,722	4–15	105,397	4– 8
1941	3,364	1–11	3,490	1–18	240,399	11–15	79,923	10– 4	28,381	4–12	90,914	7–12
1942	3,297	7– 4	3,393	5–23	231,896	12–12	75,934	12– 5	29,240	4–25	72,962	12–26
1943	3,821	1– 9	3,579	3–13	232,191	1– 9	68,182	10–16	30,732	4– 3	57,596	12–25
1944	4,357	1– 1	4,228	2–12	[4]226,424	7– 8	76,302	1– 1	30,232	4–29	49,737	3–18

TRENDS OF 1943 AND 1944

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	3,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	237,219	12,813	69,297	4,642	44,591	7,968	63,833
November 27	4,414	4,261	239,761	12,638	69,980	4,379	46,187	8,633	62,143
December 25	4,363	4,185	241,310	12,597	74,024	4,457	43,791	8,689	57,596
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 29	4,409	4,359	240,251	13,427	81,085	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,013	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,462	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
June 3	4,523	4,620	234,476	13,680	87,084	4,890	32,586	9,157	50,283
June 10	4,523	4,670	231,290	14,220	86,911	4,996	33,669	9,008	51,221
June 17	4,568	[1]4,752	230,565	14,398	85,268	4,870	34,137	9,489	52,017
June 24	4,583	4,638	229,332	14,066	86,000	4,337	34,328	8,961	52,757
July 1	4,587	4,638	228,860	14,052	83,559	4,496	35,360	8,872	52,235
July 8	4,579	4,645	[3]226,424	13,539	83,709	4,548	36,189	9,009	53,686
July 15	4,602	4,575	226,513	14,083	82,252	4,842	37,171	8,587	54,332
July 22, 1944	[1]4,615	4,684	.....	14,243	82,150	5,073	37,513	8,947	55 315
July 24, 1943	4,119	3,954	[5]237,440	11,367	74,356	3,695	33,863	8,332	67,161
Change:									
In week	+13	+109	+89	+160	—102	+229	+342	+360	+983
In year	+496	+730	—10,927	+2,876	+7,794	+1,378	+3,650	+615	—11,846
In year	+12.0%	+18.5%	—4.6%	+25.3%	+10.5%	+37.3%	+10.8%	+7.4%	—17.6%

[1] All time peak. [2] Lowest between April, 1922 and July 1, 1944. [3] Lowest since October, 1922 due to shutdown of six Mid-Continent states. [4] Lowest since April, 1922. [5] Stocks, July 17, 1943.

Pipe Line Review

FPC Sets Hearings on Various Pipe Line Jobs

The Federal Power Commission has set for hearing August 30, in Washington, the joint application of Cincinnati Gas Transportation Company, United Fuel Gas Company and Warfield Natural Gas Company for construction of new facilities, as follows:

By Cincinnati Gas Transportation Company; a 400-foot 8-inch pipe line, with a measuring station and appurtenant facilities, at Leach, Kentucky.

By Warfield Natural Gas Company: A 1350-foot 10-inch line, with appurtenant facilities, near Burnaugh, Kentucky, to link its own and Tennessee Gas and Transmission Company pipe lines; and a 2034-foot 10-inch pipe line in the same area to link its line with one to be constructed by United Fuel Gas Company.

By United Fuel Gas Company: a 1995-foot 10-inch pipe line to connect with the Warfield Gas Company lines; a 450-foot 12-inch line at the Kenova compressor station of Cincinnati Gas Transportation Company, and a 32,800-foot 12-inch and 4000-foot 16-inch pipe line from Kanawha County to Roane County, West Virginia.

A hearing also has been called for August 22, in Washington, on applications of Southern Natural Gas Company for construction of a number of loop lines and facilities, including 44,801 feet of 12-inch line for its Montgomery Loop, in Alabama; 20,700 feet of 22-inch loop line in Mississippi; 3775 feet of 12-inch line across Valley creek, Alabama; 29,505 feet of 10-inch line in Fulton County, Georgia; 1450 feet of 10-inch line in Bibb County, Georgia; 26.8 miles of loop line for its Pickens Loop in Mississippi; 5.4 miles of 20-inch line for the Georgia Loop, and 5 miles of 4-inch line for delivery of gas to Republic Steel Corporation near Spaulding, Alabama.

Big-Inch Quota

PAW last week issued schedules calling for operation of the Big-Inch pipe line at a rate of 325,000 barrels of crude daily through August and projected its operations for the following two months at the same level.

The fixed schedule for August, tentatively continued through September and October, calls for the daily movement of 132,600 barrels of crude oil from East Texas, 71,400 barrels from Southwest Texas and 121,000 barrels from West Texas.

Michigan Company Seeks Permit for Additional Lines

Michigan Consolidated Gas Company has asked Michigan Public Service Commission for authority to construct and operate gas gathering and transmission systems in the semi-developed Fork field, Mecosta County, and the undeveloped Goodwell field, Newaygo County. Both fields would be piped into the Austin storage reservoir. The Fork area would require only a small amount of transmission line to tie it into already operating main lines from other fields. However, about 15 miles of 8-inch would have to be built to utilize the Newaygo field reserve. While undeveloped, the Newaygo field from the drilling of more than 30 oil tests to the 2800-2900 foot Traverse pay has indicated a reserve of 10 billion or more feet in the Stray sand at 1100 feet.

Clearing of Haynesville Right-of-way Is Started

Clearing of right-of-way has started at Haynesville for the laying of 110-miles of 2-inch to 24-inch gas gathering lines to the gasoline extraction and recycling plant that is being constructed to serve the Haynesville field, Claiborne Parish, Louisiana and Columbia County, Arkansas. Laying of pipe is scheduled to start immediately after right-of-way is cleared.

Elk Basin-Casper Line Completion Slated Soon

Sharman & Allen have completed one third of their 85 mile spread of Stanolind Pipe Line Company's 233 miles of 12-inch line from Elk Basin to their refinery at Casper, Wyoming. I. C. Little has the contract for the balance of the line. Completion is scheduled for September 1.

Work Commences on Pipe Line North of Monroe

Interstate Natural Gas Company has started laying 49 miles of loop gas lines north of Monroe, Louisiana, work scheduled to be completed by September 1. There will be 15 miles of 16-inch lines and 8 miles of 16-inch taken up, reconditioned and relaid. In addition there will be 25 miles of 12inch line laid to loop the present line. Completion is scheduled for September 1. Sharman & Allen are the contractors.

Standard New Jersey Earnings 71 Millions

Eugene Holman, president of Standard Oil Company (New Jersey), has estimated that the company's net consolidated earnings for the first six months of 1944 approximated $71,000,000, after providing for all government taxes and $13,500,000 for wartime and postwar contingencies. The estimated earnings would amount to $2.60 per share on 27,333,742 shares. The company's earnings in 1943 were $121.327,773, equivalent to $4.45 per share on 27,283,587 shares.

Phillips Soon to Start Development in Colombia

Phillips Petroleum Company is expected to start development work shortly in Colombia on a 750,000-acre lease which it holds with Leonard Oil Development Company, Three States Oil Company and M. L. Benedum. Oil has been found in the vicinity of the holdings, a report from Pittsburgh declared.

Royal Dutch Group Ready For Quick Rehabilitation

Oil companies of the Royal Dutch Shell group already have adopted plans for rehabilitation of their properties in the Netherlands East Indies and in British possessions in the Far East. The plans will be ready for execution as soon as these countries have been wrested from axis hands, the Royal Dutch Petroleum Company said in its annual report.

Directors reported at the stockholders meet held in Curacao that reopening of the Mediterranean had eased an oil supply problem and "the group's properties and facilities made an increasing contribution to the military needs locally and in the European theater of war."

Towboat and Barge Jobs Now About Completed

Practical completion of the towboat and barge building program undertaken last year by the Office of Defense Transportation was announced July 24 by Assistant Director Ernest Holzborn, in charge of water transport.

All but one of the 21 towboats contracted for have been delivered and are in actual service on the Mississippi system, with the final boat to be delivered within the next 30 days.

The final unit of the 155 steel cargo barges, 100 of which were for oil, was delivered last week.

Contract Let for Seven More Large Oil Tankers

At the urgent request of the joint chiefs of staff, a contract for the construction of seven large tankers has been awarded by the Maritime Commission to the Alabama Dry Dock and Shipbuilding Company, Mobile.

The tankers are part of a program for the construction of 262 additional ships vitally needed for the prosecution of the war, and must be completed before July 1, 1945, to meet the constantly expanding requirements of the armed services.

A contract for the construction of eight T-2 tankers was awarded last month to the Marinship Corporation, Sausalito, California.

Imperial Oil Sets Up Plan for Medical Care

To enlarge its basic program for employe security, Imperial Oil Limited, of Canada, has added a plan which provides for medical care for employes and their families.

Hospitalization and surgical benefits for employes and their dependents include 31 days at $3.50 per day as well as $17.50 for special hospital services. Surgical benefits range from $5 to $150 for any one operation. Cost to the employe is: single person, 40 cents per month; employe with one dependent, $1.25; employe with more than one dependent, $1.65 per month. The major part of the cost is borne by the company.

Employes are eligible after three months service with the company.

☆

H. E. ZOLLER of Wichita, formerly with Shell Oil Company, has been elected president of Derby Oil & Refining Company, and its subsidiary, Derby Oil Company, succeeding Carl Fisher whose place on the board of directors is now filled by E. C. Claiborne.

U. S. Field Operations

California

Record Set in Number of Notices to Drill Wells

Eighty-two notices to drill new wells, far the largest number for any like period ever recorded in California, were filed last week. The rush of locations marked a spurt of development activity representing in the main a ninth-inning try by California producers to relieve a Pacific-war oil-supply situation that has become even more critical than expected.

California production, after a year of the heaviest drilling ever attempted, has been stepped up to levels approaching all-time tops, but still is not enough. Further heavy drains on already depleted storage is likely this quarter in spite of the expected increase in output plus help from West Texas fields already running 30,000 to 40,000 barrels a day. Quickened tempo of Pacific military operations makes greater demand, and it now appears that far heavier requisition will have to be made upon Texas supplies, regardless of transportation costs.

Opening of Elk Hills naval reserves at last is an actuality, and new production from that source will grow rapidly. Of a string of new wells already under way, four, all started after July 1, already are completed, their aggregate initial flow being 1280 barrels. At Wilmington, the one other California field with remaining undrilled proved locations in number, the drilling pace also has been stepped up, 30 of the week's 82 new locations having been for Wilmington-Long Beach wells. Because relatively shallow depths and other favorable drilling conditions both at Elk Hills and Wilmington permit rapid development, it now is assured the state's potential will show a regular increase for months to come, probably attaining 900,000 barrels a day by the end of 1944.

Fresno County: A new wildcat each was announced for the southeast Helm and San Joaquin areas. Amerada Petroleum Corporation is making the Helm test in NW SW SE 15-17-18 and Superior Oil Company is starting the San Joaquin exploration with a well in SE SW SE 30-15-17.

Kern County: A deep test seeking lower McKittrick area horizons, Standard Oil Company of California's wildcat in SW NW NW 8-30-22, drilled to 9510 feet, proved a disappointment, yielding only salt water. The company announced another McKittrick test to be started immediately in NE NW NW 36-29-21. The same company also is rigging up a new Strand area wildcat located in NE NW SW 35-29-26.

Los Angeles County: Simultaneous drilling of deep tests in several widely separated parts of what is referred to generally as the Newhall-Castaic district, is expected to give a comprehensive idea of lower horizons considered to have great potentialities. The tests comprise one by Standard Oil Company of California in the Las Llajas area, another by Barnsdall Oil Corporation in Newhall-Potrero field and a third by Wetsern Gulf Oil Company in Oak Canyon field. All of these tests are expected to go below 10,000 feet.

Tidelands: A movement has been started to open for immediate drilling tideland structures 30 miles along the California coastline, much of which stands already proven. California's state lands commission has initiated steps to unsnarl state and federal restrictions most responsible for the area remaining undeveloped. The commission expects state laws to be so revised at the January session of the legislature that all its offshore holdings can be made available at once. The commission already has cleared the way for drilling in undersea extensions of several fields and anticipates a number of projects soon will be under way, slant-drilled from upland locations, in Santa Barbara County and at Huntington Beach, Wilmington and Seal Beach in Los Angeles Basin.

State and federal cooperation probably would be obtained with less opposition in the present California oil shortage situation, it is believed.

Nebraska Location

The Texas Company has located Franktantin 1, SE NW NW 22-2n-35w, 14 miles southwest of Trenton in Hitchcock County, Nebraska. The wildcat is on a seismograph prospect.

Kansas

Another Arbuckle Lime Pool in Barton County

Phillips Petroleum Company's Chal 1, SE SE NW 25-16s-14w, Barton County, pumped 145 barrels of 38-gravity oil, no water, on initial 24-hour test. The discovery is a mile northwest of the Trapp pool. Arbuckle was topped at 3401 feet where pipe was set and the well acidized with 2500 gallons from 3401-41 feet, total depth.

McPherson County: Derby Oil Company's Day 1, NEc 1-19s-2w, 3 miles northeast of the Ritz-Canton area, pumped 100 barrels of oil in the first 24 hours from Mississippi, topped at 2984 feet with pipe set at 3984 feet. Hole was drilled to 3006 feet. Two offsets are drilling.

Stafford County: Amerada Petroleum Corporation's Alpers 1, NW NE 25-21s-13w, 2 miles northeast of the Gates pool, on drill stem test at 3659-3702 feet, recovered 120 feet of oil and gas-cut mud in one hour and is preparing to run pipe for production test. Barnsdall Oil Company's Matthews 1, NW NE NE 15-24s-14w, had a good oil show in the Lansing at 3776-78 feet, and has set pipe at 3679 feet. This test is six miles from production in the old Ratlesnake pool.

Pratt County: Skelly Oil Company

Wells Completed in the United States in Week Ended July 29, 1944

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	1	....	....	....	1	....	....	....	....	....	1	2	17	1
Arizona	....	....	....	....	....	....	....	....	3	3	3	....	6	....
Arkansas	10	....	....	....	10	....	....	....	4	4	14	7	126	148
California	33	....	....	....	33	....	1	....	8	9	42	33	1,154	785
Colorado	1	....	....	....	1	....	....	....	....	....	1	1	14	12
Florida	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Georgia	....	....	....	....	....	....	....	....	....	....	....	1	2	2
Illinois	26	....	....	12	38	1	1	....	14	15	54	36	1,020	1,020
Indiana	4	....	....	1	5	1	....	....	1	1	7	4	154	139
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Kansas	25	....	2	11	38	....	1	....	10	11	49	29	1,031	926
Kentucky	9	....	....	2	11	....	....	....	6	6	17	9	403	177
Louisiana	12	7	....	2	21	....	2	....	4	6	27	16	428	357
North Louisiana	5	7	....	1	13	....	....	....	3	3	16	7	148	157
South Louisiana	7	....	....	1	8	....	2	....	1	3	11	9	280	200
Michigan	5	1	....	6	12	....	....	....	5	5	17	38	373	297
Mississippi	5	....	....	....	5	....	....	....	6	6	11	14	101	52
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	13	15
Montana	....	1	1	2	4	....	....	....	....	....	4	7	181	129
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	7	29
New Mexico	8	....	....	....	8	....	....	....	....	....	8	5	236	140
New York	15	....	10	....	25	....	....	....	....	....	25	25	725	666
Ohio	2	5	....	7	14	....	....	....	....	....	14	19	472	507
Oklahoma	35	1	1	13	50	....	2	2	3	7	57	44	1,017	727
Pennsylvania	28	8	15	1	52	....	....	....	....	....	52	49	1,510	1,409
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	7	5
Texas	82	1	....	15	98	3	6	....	24	30	131	124	3,415	2,229
E.Tex.Bor. Co.'s	....	....	....	....	....	....	....	....	....	....	....	2	13	15
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	3	5
Rest of E. Texas	1	....	....	2	3	....	....	....	3	3	6	6	174	124
North Texas	23	....	....	7	30	3	1	....	5	6	39	24	795	530
W. Central Tex.	....	....	....	....	....	....	....	....	....	....	....	8	225	197
West Texas	33	....	....	....	33	....	2	....	2	4	37	28	898	494
Tex. Panhandle	9	....	....	....	9	....	....	....	1	1	10	10	144	115
G. Coast, Upper	3	....	....	2	5	....	....	....	2	2	7	10	316	172
G. Coast, Lower	12	1	....	4	17	....	2	....	7	9	26	25	536	336
Southwest Texas	1	....	....	....	1	....	1	....	3	4	5	9	254	206
S. Central Texas	....	....	....	....	....	....	....	....	1	1	1	2	57	35
West Virginia	1	11	....	2	14	....	....	....	....	....	14	16	522	341
Wyoming	4	....	....	....	4	....	....	....	....	....	4	1	90	65
Total U.S.	306	35	29	74	444	5	13	2	88	103	552	480	13,027	10,181

* Includes distillate wells. † Includes salt water disposal wells.

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is preparing to test an oil show in Viola at Schaw 1, NW NW NW 4-29s-13w, 8 miles southwest of the Chitwood pool. On swab at 4489-95 feet it made 5 barrels of oil in 5 hours from Simpson sand. Arbuckle tested 100 feet of oil and 400 feet of water in 24 hours at 4608 feet.

Ellis County: Bridgeport Oil Company's Strecklin 1-A, SEc NE 13-14s-18w, 3 miles southwest of the Toulon pool, cored Arbuckle at 3550 to 3578 feet and recovered good odor and saturation. Phillips Petroleum Company's Shumaker 1, SE NW SW 23-14s-17w, is preparing to test after oil-saturated core was recovered at 3490-96 feet.

Oklahoma

Wilcox Pool Is Opened In Okfuskee County

Kewanee Oil Company opened a small Wilcox pool in Okfuskee County when Marshall Community 1, SE NE SW 1-10n-8e, on initial test flowed by heads and made 35 barrels of oil and some water in the first 17 hours. Drilled to 4051 feet and plugged back to 4008 feet, it was given 5 shots at 3971-73 feet and the hole filled with 1900 feet of fluid. Operator is surveying for a possible split casing joint to account for water content.

West Edmond: Anderson-Prichard Oil Corporation's Cypher 2, CSW SW 17-14n-4w, Oklahoma County, flowed 785 barrels of oil per day from Bois D'Arc lime section at 6820-77 feet. Six wells are drilling on the north end of the pool in 14n-4w, expected to set pipe within a week, 14 are going down in the south end, nearing the pay, while four operations are reported in the Canadian County area. Phillips Petroleum Company and Cities Service Oil Company staked 17 locations in the field.

Cleveland County: West Moore is being defined as a small structure although producing wells are far from disappointing. Sinclair Prairie Oil Company's Theimer 1, NE SE SW 20-10n-3w, having drilled through the second Wilcox section without an oil show, is drilling below 9250 feet headed for Arbuckle. Margay Oil Corporation's Garlinghouse 1, NE NW NW 33-10n-3w, half a mile southeast of production, is waiting on orders after electrolog run to 8920 feet in second Wilcox showed water. Mid-Continent Petroleum Corporation's Mullins 1, NE SW SW 29-10n-3w, has set pipe at 8833 feet. It topped Second Wilcox at 8770 feet and cores had stain and odor. The company's Harris 1-B, NE NE NW 32-10n-3w, was drilling below 8600 feet.

Caddo County: Preparations are under way to drill a directional well in an attempt to kill Little Nick Oil Company's Rigney 4, SW SE NW 12-5n-9w, which has been blowing wild for over two weeks. The well, which has not yet cratered, is making an estimated 50,000,000 feet of gas a day.

Payne County: South of the Orlando pool Frank Russell's Young 1, SW NW NE 9-19n-1w, was testing a show in the Misener sand at 4870-80 feet. Tests in the Wilcox proved dry and the well was plugged back.

Creek County: L. B. Jackson's Smith 1, NE NW 9-18n-9e, a wildcat, pumped 4 barrels of oil per day and was preparing to shoot and test. Total depth

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is 3083 feet, plugged back to 2795 feet and first shot at 2760-85 feet for a good show. Jackson's Childers 2, SE SE NW 32-18n-9e, topped Mississippi lime at 2925 feet and is drilling below 3025 feet; Fred Haddock's Sarnie 1, NE SW SE 11-18n-9e, is drilling below 2480 feet after topping Bartlesville at 2383 feet. Both are wildcats.

Carter County: The Texas Company was preparing to test seven pay zones in the Pennsylvanian between 2800 and 4307 feet in Duke 1, SE SW NW 5-5s-1w. The test is 2 miles southeast of the Hewitt pool. Progressive tests of the various pays recovered considerable oil.

Garvin County: Gilmer Oil Company's Stufflebean 1, SWc SE 7-3n-2e, Pauls Valley area, was shut in for storage after finding commercial oil in the basal Pennsylvanian at 3074 feet. No gauge is available but a good producer is indicated. Ohio Oil Company completed Mueller 1, NE SW NW 17-3n-2e, in the East Pauls Valley pool for 310 barrels and about 2,000,000 feet of gas in 16 hours through perforations at 2944-2955 feet, total depth 3062 feet. The company set casing to 3015 feet and is preparing to test Burns 2, SW NE SE 17-3n-2e, an offset to the Mueller well.

Hughes County: Deep Rock Oil Corporation et al's Sanders 1, NE SE SE 17-7n-11e, wildcat midway between the Horners Corner and Lamar pools, reported stain and odor and fair porosity in a Cromwell sand core cut at 4180-90 feet. It topped the Union Valley section at 4145 feet and First Cromwell at 4172 feet. It is drilling to Second Cromwell.

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North Texas

Better Flow; Deeper Strike In Young County Wells

Preliminary flow of 40 barrels of oil hourly was made by the Standard Oil Company of Ohio's Garvey 1, northeastern Young County wildcat, after using 1000 gallons of acid in Bend saturation at 4463-85 feet. Situated on the southeast of an old shallow pool that straddles the Young-Archer County line, this discovery flowed 4 to 5 barrels hourly natural after drilling plugs, to indicate that it may have a better pay zone than some of the Bend strikes in the area.

Kerlyn Oil Company and Phillips Petroleum Company's Clarida 1, W. A. Nicholson survey, opened a new Mississippi pool or provided a major extension for deep production in northeastern Young County, with a potential of 816 barrels of 42.5-gravity oil on ⅛-inch choke. Production is from perforations at 5263-69½ feet in the lower pay, logged at 5256-74 feet, but did not flow until acidized with 2000 gallons. The upper pay at 5116-91 feet flowed oil with some salt water through tester when first drilled, and has not been retested. Clarida 1 is 1 7/10 miles northwest of the 3-well pool opened by British American Oil Producing Company, and both strikes entered the Mississippi at identical subsea depths. A dry hole was drilled to the south of the discovery of the older pool, while a north offset made a 10-barrel pumper. However, the Kerlyn-Phillips partnership scored a prolific well to the east, thus illustrating the erratic performance of these deep areas.

Montague County: Continental Oil Company and Sinclair Prairie Oil Company's Hundley 1, mile southwest of Mallard, flowed 257 barrels of oil natural on 5-hour test through ¾-inch tubing choke from perforations at 6228-35 feet in Bend, topped at 6199 feet. It is 1¾ miles north by east of the Denver 2-well pool, but is structurally lower. Productive limits of the Hildreth field were expanded a mile northwest when C. H. Murdick et al's Walthall 1-A, S. H. Smith survey, made steady oil flow after acidizing through performance at 6114-34 feet in Bend, topped at 6052 feet. Murdick et al's Parker 1, NE NE NE NW ET Ry 59, and separated from the field proper by a deep failure, entered the Bend at 6120 feet with broken lime saturation to 6202 feet, and perforating. This southwest outpost did not encounter conglomerate in the Bend in drilling to 6400 feet.

Clay County: Continental Oil Company and Edge Oil Company's Crockett 1, promising deep prospect for the Buffalo Springs area, filled 200 feet with oil and 800 feet with water in 18 hours after perforating at 6490-6500 feet in Simpson, topped at 6483 feet. Previous test of the lower section also yielded oil and water. It was drilled primarily for production in the Mississippi, which was absent.

FRED SABOURIN, formerly head of the land department of Darby Petroleum Company, at Midland, Texas, has been appointed superintendent of production for Sunray Oil Company at Great Bend, Kansas.

West Texas

Howard County Wildcat Has Promising Permian Show

Northwestern Howard County has entered a firm bid for production from the Lower Clear Fork series of the Permian through the logging of a 63-foot broken lime and shale zone with evidence of gas. This promising development was made by John B. Hawley, Jr. and Northern Ordnance's Spaulding 1, NW SE NW T&P 7, Block 33, T-2-N, which yielded 780 feet of gas-cut mud on 96-minute drill-stem test at 5100-91 feet. Circulation was lost at 5120-25 feet, and the porous zone with gas was topped at 5128 feet. This wildcat will be carried to its 6500-foot depth contract before running pipe. It is 13 miles north of the Morita pool, nearest production. Spaulding 1 entered San Andres at 3198 feet with elevation of 2651 feet. The gas horizon is probably the equivalent of the 5400-foot oil zone in the Vincent pool in Northeastern Howard County.

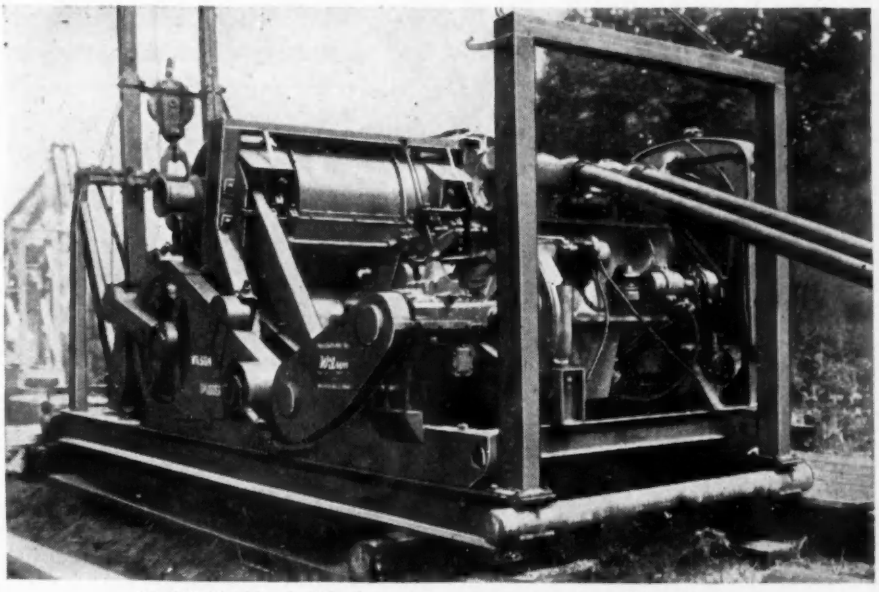
Winkler County: The Texas Company's Hogg 1, 1¼ miles northwest of the North Monahans 6200-foot Clear Fork oil area, cemented 10¾-inch pipe at 2681 feet to be prepared to make a deep test if necessary. This outpost is credited with being low on structure. DeKalb Agricultural Association's Mitchell 1, 1¼ miles east, was drilling lime at 5940 feet, and running about 75 feet low to the discovery. Stanolind Oil & Gas Company is trying to complete 2 wells in the North Monahans field, including a mile east outpost. The northwest production trend for the Wheeler-Ellenburger area indicated by geophysics has been confirmed by favorable markers listed for Stanolind Oil & Gas Company and Shell Oil Company's Wheeler 1-C, ¾-mile northwest of a structurally-low thin-pay well. Wheeler 1-C was drilling lime at 8374 feet, having logged base of the Permian at 7870 feet, or 12 feet low to the partnership's discovery, and top of the Mississippi shale was called at 8005 feet. Superior Oil of California's Wheeler 1, north offset to the discovery, was coring at 10,597 feet with some gas showing. It is credited with being at the Simpson-Ellenburger contact, and is checking about 100 feet low.

Crane County: The Texas Company's Hobbs 1-A, which showed for a Devonian oil discovery from perforations at 5300-50 feet last spring, flowed 23 barrels oil, with 3 percent bs&w, the first hour after additional perforations at 5365-90 feet. The company's Hobbs 1-B, an offset, was drilling cherty lime at 5385 feet, with 7-inch on top of the Devonian at 5325 feet.

Pending Prospects: Hunt Oil Company, which is acquiring numerous blocks in all sections of the basin to be drilled, has projected a 7500-foot Clear Fork test on the M. A. Thornberry tract, C NW SE PSL 5, Block A-42, Andrews County and 2½ miles northwest of the Mascho field. The company has 6 sections of supporting acreage. In Cochran County, Stanolind Oil & Gas Company assumed an 8500-foot drilling obligation in acquiring lease on 6545 acres of the C. C. Slaughter ranch, immediately south of Morton. Ray A. Albaugh et al contracted to drill a 4000-foot cable-tool wildcat in Howard County on the Chris Anderson tract, N½ T&P 29, Block 32, T-2-N, with Stanolind Oil & Gas Company contributing the latter and financial support. W. S. Guthrie et al will seek a major north extension for the Sharon Ridge field, Scurry County, with a test slated for H&TC 160, Block 97. Phillips Petroleum Company is planning to drill in H&TC 366, Block 97, Eastern Borden County, on acreage out of the large lease block assembled on the Borden-Scurry County border by P. W. Anderson et al. The latter have since sold blocks to The Texas Company, Stanolind Oil & Gas Company and Richfield Oil Corporation.

Reagan County: Amerada Petroleum Corporation's Hickman 4, northwest outpost, ½-mile from nearest production in the Barnhart area, swabbed water from perforations in the lower pay zone at 9284-9307 feet, and will complete from broken Ellenburger at 8960-9130 feet.

Failures: Culbertson & Irwin's Barnes-Humble 1, Pecos County wildcat, and on the deep-seated granite mountain that accounts for unusually high Ellenburger, found an abundance of sulphur water in Ellenburger at 4385-4452 feet. In Dickens County, Geo. P. Livermore's Bird 1 entered San Angelo lime at 2493 feet with water evident at intervals in drilling to 2602. Stanolind Oil & Gas Company's DeLoach 1, Western Hockley County, topped Glorietta at 5020 feet, and quit at 6510 feet. The Irion County test of Shell Oil Company on the Tankersley 12,988-acre



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lease, failed to respond to acid treatment of Ellenburger, topped at 7360 feet, and was awaiting plugging orders at 9357 feet in Cambrian. Bay Petroleum Corporation's Cox-Humble 1, Gaines County wildcat, was idle at 5205 feet after logging fair to good porosity carrying oil and water below 5150 feet in San Andres, topped at 4600 feet.

Andrews County: Union Oil Company of California's Biles 6, 1½ miles northwest of the Union field, recorded low structural position in topping San Angelo at 5670 feet; Clear Fork at 6140 feet and Tubb sand at 6650 feet, with elevation of 3405 feet, and was drilling dry lime at 7365 feet. This company and Helmerich & Payne's Redus 1-B, 1 2/3 miles southwest of the Union field, halted at 7415 feet in broken pay entered near the 6900-foot level to set pipe for completion. The structural dip was not so pronounced in this outpost, which entered Clear Fork at 6030 feet and Tubb sand at 6570 feet with elevation of 3356 feet. Shell Oil Company's Cox 1, 4 miles northwest of Union field, was making production test of Devonian perforations at 8550-70 feet, having set pipe at 8724 feet after plugging back from granite at 11,061 feet. Pipe was set primarily to test Clear Fork at 7380-7508 feet. Mid-Continent Petroleum Corporation's University 1-7, southwest outpost for the Fullerton field that showed for oil production in Wolfcamp at 8470-8685 feet halted in brown lime at 8928 feet to set 7-inch before continuing to Ellenburger.

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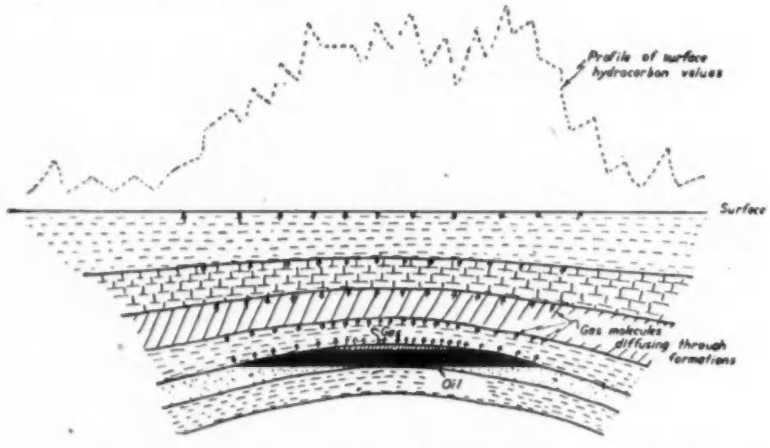

The sketch shows an idealized section of an oil reservoir, showing the diffusing molecules by arrows. The dotted profile shows the value of hydrocarbon concentrations as measured by the Surface Analysis survey.

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HOUSTON 1, TEXAS

Texas Panhandle

Dallam County Deep Test Plugging Back to Permian

Pure Oil Company's Sneed 1, Dallam County wildcat that entered granite at 6769-79 feet, will be plugged back to set pipe in Basal Permian near the 4800-foot level to make a production test, This second deep test for the company in Dallam County entered Mississippian at 5331 feet and Ellenburger at 6182 feet with elevation of 4013 feet. The interval between the top of the Mississippi and top of Ellenburger in the failure was only 467 feet as compared to 851 feet.

Stanolind Oil & Gas Company's Herring 1, Oldham County Ellenburger project, was drilling limey-shale at 5903 feet. This is the company's sixth try for Ordovician production in the Panhandle within the past two years, and four failed to reach their objective granite. Humble Oil & Refining Company is starting an Ordovician test, or 8000 feet, in western Deaf Smith County on a block of 14,000 acres that extends into Curry County, New Mexico.

Development: A moderate drilling boom is again underway in the Panhandle oil and gas fields, with gas development figuring prominently in the revived activity, especially in sparsely drilled proved areas in Moore and Gray Counties. Phillips Petroleum Company has scheduled an ambitious drilling campaign on its gas holdings that center upon the Hansford-Sherman County line. Four gas wells in process of completion—and the company has acquired site for a gasoline plant in Hansford County to process the gas before making it available to transmission lines.

Southwest Texas

Plan Willamar Field Test To Go to 12,000 Feet

Pan American Production Company's A. B. Crane 1, Willamar field in Willacy County, scheduled to start, is on a 180-acre lease in Share 13, San Juan de Carricitos Grant, and will be drilled to 12,000 feet, as the first deep test for the field. Present production is found in the upper portion of the Frio at 7600-7950 feet in most wells, and it is believed that at 12,000 feet the new test would still be in the Frio. Sun Oil Company's Santa Rosa 1, recently abandoned below 11,500 feet, and 20 miles northwesterly from the Willamar field, was still in Frio when drilling stopped, and had showings of oil and gas throughout the section, although production tests were all made above 8000 feet, and failed to make oil in commercial quantities. Willamar, one of the most active in Southwest Texas, is defined by dry holes only on the south, although operators now have a fair estimate of how much farther it will go in at least two other directions. From present indications it will cover something like 12,000 acres.

Bee County: Navarro Oil Company's E. J. Spielbagen 1, wildcat 2 miles northwest of Pettus in the John Page Survey, is coring below 7105 feet in shale and sand after recovering 180 feet of 34-gravity oil on drill-stem test

at 7047-69 feet. Packer failed after 28 minutes, using ¼-inch chokes, but in addition to the 180 feet of clean oil, 90 feet of oil-cut mud was recovered, with working pressure 42 pounds. Contract depth of the well is 8000 feet.

Burford Goodwin's Linke 1, new Vicksburg test 1½ miles southeast of the Yougeen Field in Bee County School Land Survey 13, has set surface casing with Joe Cosner as drilling contractor.

Stanolind Oil & Gas Company has added a new dual-completed producer in the Blanconia field with completion of Nannie Tuttle 1, making an unestimated amount of gas from upper perforations at 4914-28 feet, and 29 barrels of 25-gravity oil daily from lower perforations at 4973-75 feet. Flow was through a 3/16-inch choke with tubing pressure 1880 pounds and gas-oil ratio 53,000-1. Total depth is 4984 feet, plugged back to 4977 feet.

Brooks County: Sun Oil Company's D. J. Sullivan 1, wildcat 8 miles east of Falfurrias, is reaming to present depth of 8516 feet before coring and drilling deeper. After recovering sand with some shows just below 8400 feet, drill-stem test at 8433-52 feet, ¼-inch chokes, recovered part of the water cushion after a slight gas blow, and showed a small amount of distillate.

Jim Hogg County: Sinclair Prairie Oil Company's Aurora G. Gallagher 1, 1½ miles southeast of the Neuhaus field, is preparing to make production tests of showings recovered in coring broken formation at 3777-99 feet. Total depth is 3803 feet with 5½-inch casing set on bottom. Sand recovered showed odors of oil and slight saturation through most of the section, but with salt water in the bottom foot or two of sand.

Starr County: Lockhart & Davenport's Frank Zarsky 1, in the Lockhart area, is running casing after reaching 4934 feet and running electric log. Showings of oil were found in cores at 3700-35 feet in sandy shale and sand formation, and in a thin section at 4375 feet.

Texas Gulf Coast

Needville Extension Well To Test in Second Sand

British American Oil Producing Company has indicated an attempt will be made to dual-complete its Ed Hurta 1, which has already made tests which assure opening of a new deeper Frio sand as well as extending the Needville field, Fort Bend County, ½-mile southwest. Casing was perforated at 6547-52 feet in the deep sand, and on a drill-stem test allowed to flow for nearly 24 hours, flowed 29.5-gravity oil at the rate of 5½ barrels hourly through a 5/32-inch choke with tubing pressure 2175 pounds. Perforations were then squeezed and a squeeze job made above and below the upper sand at 5200 feet for a production test scheduled for late in the week. Should this test also prove productive, an attempt will be made at dual completion. The upper sand showed more than 500 feet of oil on a drill-stem test at 5187-5201 feet at the time the sand was cored.

The Texas Company is building roads to E. Zwhar 1, new wildcat to be drilled 2 miles east of Needville, in the east quarter of H&TC 41. It will test the

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Frio sands found productive at Needville.

Colorado County: Shell Oil Company has made 3 locations in the Sheridan field in the western part of the county, as commencement of the development program in connection with operation of the new recycling plant now under construction. In addition to wells recently completed from two horizons, and those now scheduled to start drilling, plans are to rework some of the older wells and make dual completions.

In the Ramsey area, Cities Service Oil Company has made location for Winnie Poole 1, to be drilled as northeast offset to Frank Stephens 1, the discovery well completed in 1943 as dual completion in the Wilcox. It produces from 8320-40 feet and 8948-70 feet.

Quintana Petroleum Company has made location for 4000-foot test, H. R. Cullen 1, 10 miles north of Columbus, in the Charles Fordtran Survey.

Chambers County: Gulf Oil Corporation has failed in an effort to extend the Fig Ridge field a mile to the east, Steenerson 1, T&NO 91, being abandoned after electric log run to 9209 feet failed to indicate commercial showings.

Humble Oil & Refining Company's Mayes 2, wildcat on the Mainland opposite Smith Point field, is preparing to drill below 8500 feet after running electric log to that depth. It should be in or very near the section which produces in the Smith Point field, although no details have been reported. In the Smith Point field, Standard Oil Company of Texas' State 4-109, 1285 feet northeast of the nearest production, is drilling below 8110 feet after having had to rework the water well.

Fort Bend County: Humble Oil & Refining Company has made locations for two more tests on the south end of the Katy gas field. Well 16 on Katy Gas Field Unit II on the C. J. Bartlett land will be in the C. W. Schrimph Survey, southeast of present production and in Fort Bend County. The other test will be well 15 on the same unit, but in the J. W. McCutcheon Survey.

Wharton County: The Texas Company will drill C. D. Bergstrom 1, WCRR Survey 37, 6½ miles northwest of Hillje and a mile northwest of Continental Oil Company's Peterson 1, a dry hole at 5542 feet. The Texas Company's well is scheduled to drill only about 5000 feet for a test of the upper Frio.

Cockburn Oil Corporation's H. P. Stockton 1, in the area 3 miles northwest of East Bernard, has been abandoned at 7964 feet after three different tests in sand around 7800 feet showed salt water and a little oil.

Wilcox Test at Conroe: George W. Strake has made location for P. G. Krohn 1-W, 660 feet from the south and east lines of the Krohn B lease in the S. H. Bryan Survey for a 12,000-foot test of Wilcox. Location 1100 feet east of the western limits of Cockfield production. Two previous Wilcox tests were on the east and southeast sides of the dome, outside production, and drilled with all information withheld. Conroe was discovered by Strake in 1931, and was the first important Cockfield strike. Reserve has been estimated in excess of 600,000,000 barrels of which 161,943,347 barrels had been produced to the beginning of 1944. There are 917 wells producing on its 19,000 acres, 829 of which are still flowing.

East Texas

Bowie County Smackover Strike Changed to Oil

Renewed interest in Smackover lime production possibilities in Northeast Texas has been reflected by the successful conversion of Barnsdall Oil Company et al's Heilborn 2, Bowie County's first commercial well, from a prolific gas-distillate well to a high-gravity oil producer. The oil flow followed the deepening of the wildcat from 7701 to 7716 feet, and gauged 27.89 barrels of 38.8-gravity light green oil per hour through ¼-inch chokes on tester that was set at 7703½ feet. The daily gas volume from this lower zone was rated at 1,100,000 feet, or 1665 feet per barrel. Smackover lime perforations at 7686-96 feet that tested 62 barrels of 71-gravity distillate and 3,200,000 feet of gas through ¼-inch choke during 23½-hour gauge prior to deepening have been squeezed. A liner will be set to exclude this gas-cap zone. Barnsdall Oil Company is arranging for a pipe-line connection, and will proceed with development of the supporting block. This strike is believed to involve a faulted structure, but no evidence of a fault is apparent in the log of the producer, or the offset Smackover failure.

Smith County: Phillips Petroleum Company's McMinn 1, discovery Rodessa well for the South Tyler field, has been placed on a larger choke, resulting in a flow of 268 barrels of 47.8-gravity oil with gas-oil ratio of 7700/1 on 10/64-inch choke. Tubing pressure dropped to 4650 pounds.

Wood County: Gulf Oil Corporation's Hornbucke 1, second test for the Winnsboro 8000-foot Rodessa pool, was drilling dry sandy-shale 8740 feet to explore Travis Peak before landing pipe to complete. Saturation was passed up in Rodessa at 7938-48 feet and a tight sand at 8225-29 feet showed good porosity and oil content. Magnolia Petroleum Company's McGee 1, wildcat in western Wood County, halted for repairs at 8088 feet, with base of massive anhydrite at 7993 feet, being 45 feet high to a failure in the Alba area. In the Manziel field, Amerada Petroleum Corporation's Hague 1 was drilling shale at 8576 feet on an 8770-foot contract. The only show logged to this level was an extremely porous zone at 8492-99 feet. Shell Oil Company's Herring-Scoggin 1, southwest edge of the field, halted at 9301 feet and will set pipe near the 8715-foot level to try for completion in nominal shows from the Rodessa.

Van Zandt County: The Texas Company's Easley 1, N. T. Dickerson survey, was drilling at 8895 feet in dry Travis Peak, topped at 8627 feet. A small show of oil was passed up at 8211-35 feet.

South Louisiana

St. Martinville Mile North Extension in Another Sand

After installing a 10/64-inch bottomhole choke before making final test, Continental Oil Company and Standard Oil Company of Kansas' Standard of Kansas Fee 2, on the north side of the St. Martinville field in St. Martin Parish, produced 39 barrels of 49.5-gravity condensate in 24 hours, with gas-oil ratio 56,645-1, tubing pressure 3550 pounds, and casing pressure 3750 pounds. This well is of importance as extending production in the field nearly a mile north, and opening another pay sand in an area where the discovery and one other well had been the only producers since the field was opened in 1935. Casing had been perforated for this completion at 9734-44 feet, but the well had 70 feet of effective gas-condensate sand in the section from 9650-9750 feet. No new locations have been announced.

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equipment for the next well on Hager-Martin Dome (formerly called Section 28 Dome), Stanolind Oil & Gas Company has made location for Iowa-St. Martin Land Company 1, also in Section 21-9s-7e, on the north flank of the dome.

Lafourche Parish: Humble Oil & Refining Company has made location for a 9000-foot test in the Delta Farms area, I. R. Price 1, SE 25-16s-22e. No operations started yet. The California Company's Delta Farms 18 in Section 31-16s-23e, is drilling below 7740 feet, and Delta Farms 19 is below 7450 feet.

Cameron Parish: Humble Oil & Refining Company's State Rockefeller Preserve 1, wildcat in the southeastern corner of the parish, is changing mud after rigging up blowout preventer, preparing to drill below 9990 feet where it landed 9⅝-inch casing.

St. James Parish: In the Vacherie Area, Humble Oil & Refining Company's St. Joseph Planting & Manufacturing Company 1 is preparing for a production test after perforating casing from 9126-36 feet. Total depth was 10,765 feet where it showed some pressure, but casing was set only to 9210 feet.

Evangeline Parish: Gulf Refining Company's Schlicher-Thomas A-8, which had previously been reported certain to open south flank production on the Pine Prairie Dome, flowed 110 barrels daily through a 3/16-inch choke on potential test, through casing perforations at 9272-80 feet and 9286-93 feet. Tubing pressure 225 pounds. This production is from the Sparta section, deeper tests in the Wilcox having shown nothing but water and gas. The company is preparing to drill T. L. Stokes 1, Section 23-3s-1w, on the north flank of the same dome.

North Louisiana

Webster Wildcat Reports Stain Just Above Rodessa

Carter Oil Company's Davis 1, Section 33-18-8w, Webster Parish, is drilling below 5325 feet after recovering 8 feet of hard, tight oolitic lime in core at 5290-5300 feet where it should be just about entering the Rodessa zone in the Glen Rose. The lime had some staining and bleeding with pin points of oil, but there was a foot of anhydrite in the core also. It will core again at the next soft spot. This wildcat has been reported 108 feet higher on upper markers than Union Producing Company's Walker 1, dry hole 2 miles northwest.

Franklin Parish: C. L. Smith et al's Bates 1, wildcat 4 miles northwest of the town of Wisner, is drilling at 7354 feet in sand and shale, with formation not yet identified, but it is believed to be just above the Paluxy. No oil showings have been reported.

Bienville Parish: Southern Natural Gas Company's Cummings 1, an outpost ¾-mile southeast of production in the Bear Creek gas field, was drilling below 5778 feet, looking for the Pettit and Travis Peak zones, both of which produce gas in this field. The area is considered one of the larger gas reserves in North Louisiana, covering something like 10,000 acres, with wells completed for an average potential between 40,000,000 and 50,000,000 cubic feet daily.

Jackson Parish: Shell Oil Company's Tremont 1, new wildcat in Section 22-15n-1w, has started rigging up. Crescent Drilling Company is contractor and will take the well to 8000 feet.

Bossier Parish: Barnsdall Oil Company's Hanks 1, deep wildcat 6 miles northeast of Benton, is coring below 6100 feet after having pulled a core from 6085-95 feet, in Travis Peak containing 2 feet of sand and 8 feet of shale with no showings of oil or gas.

Arkansas

Magnolia Disposal Wells Planned to Hold Pressure

Carter Oil Company is starting on the first of several wells in the Magnolia field in Columbia County, to be used for salt-water disposal, at the same time aiding in water-drive for secondary recovery. Other operators in the field are cooperating in the plan which has been found beneficial at Midway.

Grady H. Vaughn is drilling a wildcat in Columbia County, 3 miles northwest of Dorcheat-Macedonia. Bodcaw 1, 14-18s-23w, is drilling below 3900 feet now after picking base of Annona at 2600 feet. It is scheduled to test Smackover, probably to 10,000 feet.

Ouachita County: Grady H. Vaughn's Haltom 1, 28-15s-18w, is preparing to drill deeper after failure to get a drill-stem test at 2340-60 feet, in the Buckrange zone. The well tried to blow out at 2200-20 feet while a core was being taken, but was controlled and the core recovered, showing gas in upper part and oil in the bottom.

Mississippi

Jefferson Davis Test Has Multiple Showings of Oil

S. W. Richardson's Berry 1, wildcat in the extreme northern part of Jefferson Davis County, is making a series of tests which may result in opening of a new oil field for Mississippi, possibly from the Tuscaloosa, with good indications of oil in the Eutaw as well. With total depth 9967 feet in the Lower Cretaceous, casing was set to 8173 feet for tests above that point. Good oil showings have been reported in a series of sands in the Tuscaloosa at 7903-10, 7920-30, 8065-90, 8095-8105, and 8125-40 feet, and it is likely that first test is scheduled for most of these sands. In the event these sands fail to produce, tests will be made in the Eutaw where three favorable sands were logged between 7727 and 7880 feet.

Claiborne County: Sun Oil Company's Hammett 1, which blew out last week while a core was being pulled from 1827-37 feet, and was out of control making a large volume of gas for several days, has been junked after having killed itself. At the time the well was blowing it was estimated making as much as 35,000,000 cubic feet of gas daily.

Lamar County: Gulf Refining Company is moving in rig for C. V. Cooper 1, NW 7-1n-16w. A proposed deep wildcat, it is being drilled on a detailed seismograph geophysical picture.

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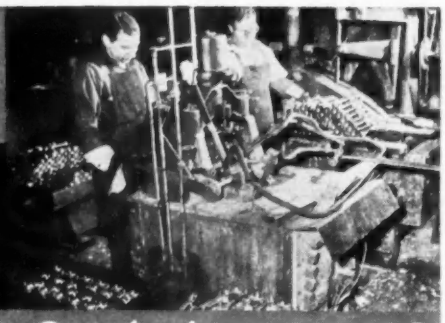

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Florida

Humble Starting Third Test in Collier County

Humble Oil & Refining Company has staked a third test in Collier County, Gulf Coast Realty 3, C SW SE 28-48-30, while still drilling on Gulf Coast Realty 2, C SW SE 30-48-30, deepest hole ever drilled in Florida, coring lime below 12,638 feet, having gone out of anhydrite between 12,618 and 12,638 feet.

The company's Gulf Coast Realty 1, in the same vicinity, is the state's only oil producer. The Gulf Coast Realty 2 made a show of heavy black oil at 11,636-39, which they may go back and test if nothing is found deeper.

Stanolind Oil & Gas Company is clearing location at St. Joe 1, 15-2-2, Leon County, and Pure Oil Company is building roads to C. C. Hopkins 1, C SW NE 21-6-9, Gulf County. A third new exploratory test, Humble Oil & Refining Company's G. C. Carlton Estate 1, 34-38-29, Highlands County, has derrick up and is waiting on rig.

Humble Oil & Refining Company's State 1, 30-55-36, Dade County, at 3810 feet in lime, is reaming to an 18-inch hole.

Alabama

Six-Mile Step-Out Is Making Small Pumper

H. L. Hunt's Robert T. Land 2, C SW NE 36-11-5, Choctaw County, 6 miles west of Gilbertown field, is being completed as a small pumper from the chalk at 2800 feet. Hole was drilled to 5400 feet and plugged back to the Eutaw at 3670 feet where a test got salt water, then plugged back to chalk. Pumping unit is being installed. Hunt's W. S. Scruggs 1, SE NE 32-11-4, is drilling below 2700 feet.

Hunt's W. J. Trice 3, 35-11-4, Gilbertown field, completed several days ago, is pumping 40 barrels oil daily, with 6 percent salt water. His W. J. Trice 4, 35-11-4, has been swabbed in and is waiting on pump.

Humble Oil & Refining Company's Skinner 1, 10-3-10, Escambia County, is drilling at 8519 feet. Stanolind Oil & Gas Company's Woods A-1, 23-14-15, Lamar County, is drilling below 1900 feet in sandy shale. The Texas Company's Odom 1, 27-4-3, Washington County, is drilling below 6030 feet.

Georgia

Hunt Starts Another Wildcat After Failure

H. L. Hunt, who last week abandoned a wildcat in Clinch County, Georgia, has spudded a new wildcat in Decatur County, Metcalf 1, CNE Lot 260, District 21, rigging up.

The test abandoned last week was Ellis Mangrove 2, Lot 523, District 12.

Stanolind Oil & Gas Company's Pullen 1, Lot 133, District 10, Mitchell County, was drilling in shale and lime at 7240 feet.

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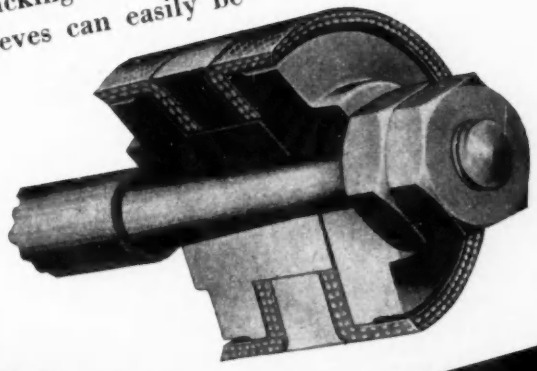

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Illinois Basin

Gallatin County Well Shows; Two Strikes in White County

Swan and Leach apparently have a Tar Springs sand well in Gallatin County at Goforth 1, SE SE SW 27-7s-10e, which showed for 200 to 300 barrels daily after a 40-quart shot in the sand, recovered at 1992 feet. The well, about two miles southeast of New Haven, was shut in pending erection of storage tanks.

White County: Two discoveries were recorded in this county last week, one a pool opener, the other a new horizon in a proven production area. Sohio Oil Company's Union Central 1, SE NE NW 10-7s-10e, two miles east of New Haven, swabbed 65 barrels of oil in 24 hours from Tar Springs sand at 2170 feet, for a new pool. Ben Nation's Pollard 1, NE NW NE 28-3s-7e, in the Burnt Prairie pool, flowed oil in 30 minutes on a drill-stem test of Aux Vases sand at 3250-80 feet and casing was set for test. The pay is new in the pool, which heretofore produced only from McClosky lime. Production from the McClosky was so small that the pool recently was placed on the government's list of pools in which operators were eligible for premium payments as a result of the low production average.

Richland County: The Schnell pool was given a slight extension at Pure Oil Company's Smith 1, SW SE SE 35-3n-8e. The well pumped 285 barrels of oil from McClosky lime in 24 hours from 3002 feet.

Wabash County: Allied Pipe Line Company's William Dunn 1, NW NW SE 11-3s-14w, a wildcat, is drilling below Tar Springs sand at 2100 feet.

Franklin County: H. J. Schafley has set casing for test of Benoist sand at Baldwin 1, SE SW SW 36-5s-3e, with total depth of 2837 feet, and has moved rotary tools on location for Baldwin 1, NE SE NW 32-5s-3e, a wildcat test three miles northeast of Benton.

Indiana

Pipe has been set at 2500 feet in Cherry & Kidd et al's Baird 1, SW SW NE 25-3s-12w, Gibson County, after a 12-minute drill-stem test recovered 1230 feet of oil and 90 feet of oil-cut mud in the McCloskey lime at 2511-27 feet.

Posey County: Farm Bureau Oil Company's Graulich 1, SE SE NE 9-7s-13w, eight miles southwest of Mt. Vernon, abandoned at 2803 feet.

Spencer County: The Texas Company has abandoned Gogel 1, SW NW SW 25-4s-5w, 14 miles northeast of Boonville, at 2524 feet.

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Michigan

Montcalm Discovery Not Keeping Up Its Promise

H. L. Wadsworth et al's Peters 1, NW SW SW 32-9n-5w, Bloomer Township wildcat, Montcalm County, lost most of its early promise when it started to slug with water and production dropped to a negligible point within a week. The well produced up to 215 barrels a day naturally from the Traverse lime at 2633-58 feet and a gross amount of 1700 barrels before going practically dead. Operators are setting casing and probably will pump.

Production: Michigan production was reported at 1,502,498 barrels in June compared to 1,621,412 in January and 1,717,106 barrels in June a year ago. Runs were about 1,110,000 barrels lower the first half of this year than for a like period in 1943.

Rocky Mountain Area

Two Tests Start in Colorado; Wyoming Field Gets 2nd Test

The California Company is rigging for its third deep test of the Rangely field, Rio Blanco County, Colorado, McLaughlin-Government 1, C SE NW 24-2n-103w, northwest of the Weber sand discovery well of the field, Raven 1, the only deep sand producer in the field. Emerald 1, west offset to the discovery, is nearing the Weber sand. Deep tests are being drilled in the field by Wasatch Oil Refining Company and by Newton Oil Company.

Craig Structure: The Craig structure, east of Bell Rock in Moffat County, Colorado, will be tested to the Mesaverde in a 4000-foot test to be drilled by Republic Oil Company, with the possibility of testing the lower sands. The new well is in SE SE SW 9-6n-91w. Ohio Oil Company drilled three wells in the same section in 1933 which found gas in the Morapos sand. Republic Oil Company controls 1160 acres on this structure, with Continental Oil Company, The Texas Company, Ohio Oil Company and Stanolind Oil & Gas

Company, holding the balance of the acreage.

Golden Eagle: Pioneer Oil Corporation is moving in for its second test of Golden Eagle in Hot Springs County, Wyoming, recent Muddy sand discovery. Location for the new well is in C SW SE 12-45n-97w, 1/3 mile southeast of the discovery well.

Maryland Drilling Planned After Geophysical Survey

A test is to be drilled in Wicomico County, Maryland, near Salisbury, with work to begin within the next week. Ohio Oil Company is said to have approximately 250,000 acres under lease in Wicomico and Worcester Counties, with smaller acreage in Lower Delaware. Exploration work was begun over a year ago, with much geophysical work in charge of General Geophysical Company, of Houston.

Other companies interested in the area include Standard Oil Company of New Jersey, Sun Oil Company, Sinclair Refining Company and Pure Oil Company.

The well will be exploratory with frequent coring. The rotary rig is capable of drilling 15,000 feet.

Two previous attempts to find oil in this area within the past 30 years were failures. However, it is said that both projects were under local sponsorship and were without geological and geophysical study.

WESTERN CANADA

Highwood Gets Another Test After Long Delay

Transcontinent Oil Company, Ltd., a new company backed by Eastern Canadian and United States capital, has staked the first of two tests for the Highwood Uplift, the Madison Limestone body flanking Turner Valley to the west and extending southward for several townships.

Transcontinent 1 will be drilled in lsd 4 36-18-3w5th, ¼ mile southeast of the Northwest-C. & E. test drilled in 1930. This test is believed to be down the west flank of the narrow anticline whose crest will be sought by Transcontinent. The 1930 test found Madison at 2494 feet, with a narrow porous zone showing oil at 2535 feet and water at 2650 and 3000 feet. The new test expects Madison lime around 1800 feet.

The Royalty Bonus principle has been soundly rejected by the Alberta oil industry. Two lease blocks in Calling Valley and Skiff were offered for auction by the provincial government at sales July 12 and 18, tenders requiring a royalty bonus in place of the usual cash per acre. No bids were received on the blocks, despite the fact that several companies are active in the areas involved, and would lease and develop if the crown lands were offered on the normal basis.

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M. T. HARTWELL, former West Texas geologist for Mid-Continent Petroleum Corporation and more recently with Buffalo Oil Company, has been placed in charge of a new district office established by Snowden & McSweeney Company at Midland. The latter has production and considerable acreage in the Permian Basin.

U. S. Exploratory Completions

ARIZONA WILDCATS

Maricopa County—Failure: John A. Robertson et al's Fee 1, 33-5n-3w, abnd 1950 ft.

Pinal County—Failure: Hatchett & Harkey & Smith's Hatchett 1, 330 ft snl 2140 ft ewl 22-7s-8e, abnd 1400 ft.

Yavapai County—Failure: Chino Valley Oil & Dev. Co.'s State 1, 20-18n-2w, abnd 2600 ft.

ARKANSAS WILDCATS

Columbia County—Failures: Crescent Drilling Co.'s Cooley 1, 5-17-20, abnd 7750 ft.

Northern Ordnance Co.'s J. B. Wells 1, c nw ne 25-16-19, abnd 7286 ft.

Nevada County—Failure: Placid Oil Co.'s J. B. Silvey 1, 14-14-22, abnd 4740 ft.

Union County — Failure: Curtis Kinard's Mary Finley 1, se nw sw 12-17-14, abnd 3334 ft.

CALIFORNIA WILDCATS

Imperial County — Failure: Standard of Cal.'s Southern Land Co. 1, nw sw nw 27-11-19, Salton Sea area, abnd 4531 ft.

Kern County — Discovery: Amerada's Ant Hill-S. P. 36-15, sw nw sw 15-29-29, Ant Hills area, pump 70 bbls 13.1-gr oil, 9 wtr, 44 ft perf ldd 2225 ft, Olcese 2180 ft, td 4159 ft.

Kern County—Failures: Anderson Giffen & Anderson's Durnal 1, se se se 24-27-28, Mount Poso area, barren Vedder 739 ft, abnd 785 ft.

Richfield Oil Corp.'s Old River KCL 1, nw nw se 3-31-26, Ten Section area, abnd 9191 ft.

Standard of Cal.'s Ethel D. S. 1, se nw se 36-12-24, Maricopa area, Midway field 15,000-ft deep test, unfavorable formations with very steep dips, abnd 8647 ft.

Standard of Cal.'s Franco-Western S-2, sw nw nw 8-30-22, McKittrick area, Miocene 2040 ft, Carneros 7145 ft, abnd 9510 ft.

Richfield Oil Corp.'s Fairfield 25, ne nw nw 11-31-22, Midway area, Main oil sand 1588 ft, Reef Ridge 1660 ft, abnd 1693 ft.

Madera County—Failure: Union Oil Co.'s Pacific Land Co. 1, corehole, sw sw sw 35-11-18, Madera area gas test, abnd 3670 ft.

Ventura County — Failure: Shell's Rogers "B," corehole, sw nw se 22-5-18, Devil Canyon Anticline, gray sandstone, abnd 2752 ft.

ILLINOIS WILDCATS

Clay County—Failure: Nat. Assoc. Pet.'s Hunley 1-A, se sw sw 8-3n-8e, abnd 3100 ft.

Effingham County—Failure: Nation's Bergman 1, ne ne ne 31-6n-4e, abnd 2386 ft.

Fayette County — Failure: Doran et al's Mueller 1, nw sw se 4-5n-1e, abnd 1724 ft.

Franklin County—Failure: Adkins' Peabody Coal et al 1-C, se nw 9-7s-3e, abnd 2310 ft.

Hamilton County—Failure: Nat. Assoc. Pet.'s Little 1, sw nw sw 3-6s-7e, abnd 3417 ft.

Jefferson County—Failure: Oberling's Maxey Comm 1, sw sw sw 18-2s-3e, abnd 2839 ft.

Lawrence County—Failures: Robinson et al's Heath 1, nw ne nw 3-3n-13w, abnd 2383 ft.

Texas Co.'s Gilder 1, sw sw ne 21-3n-13w, abnd 2774 ft.

Richland County—Failure: Pure's Diesser 1, se se nw 36-4n-9e, abnd 2990 ft.

Saline County—Failure: Magnolia's Pruitt Estate 1, ne se ne 7-9s-6e, abnd 2886 ft.

Shelby County — Failure: Tharpe et al's Hostetler 1, se nw nw 33-11n-4e, abnd 2037 ft.

Wabash County—Failure: Fox et al's Thompson 1, sw sw sw 3-3s-13w, abnd 2773 ft.

Washington County—Failure: McBride, Inc.'s Jasper 1, sw se nw 11-2s-3w, abnd 1652 ft.

Wayne County—Oil Discovery: Pure's Wayne County Farm 1, sw se nw 24-1s-7e, pump 382 bbls. McCl 3312-25 ft, td 3332 ft.

White County—Failure: Lambert's Burkhardt 1, ne ne sw 16-5s-9e, abnd 3446 ft.

INDIANA WILDCAT

Spencer County—Failure: Texas Co.'s Gogel 1, se nw sw 25-4s-5w, abnd 2502 ft.

KANSAS WILDCATS

Barton County—Oil Discovery: Derby et al's Kruckenburg 1, se se nw 13-19s-15w, 10 qts 3547-52 ft, pump 36 oil, 12 wtr, td 3552 ft.

Cowley County — Failure: Texas Co.'s Schwantes 1, nec se 5-32s-4e, Arb 3484 ft, abnd 3500 ft.

Douglas County—Failure: Skelly's Middlekauf 1, sw ne ne 21-13s-19e, Base KC 484 ft, Miss 1267 ft, abnd 1271 ft.

Ford County—Failure: Texas Co.'s Andrews 1, nw nw sw 17-29s-23w, Miss 5308 ft, Arb 6370 ft, abnd 6485 ft.

Phillips County—Failure: Texas Co.'s Armstrong 1, se se sw 2-5s-18w, abnd 3490 ft.

Reno County—Failure: Lion's Eccles 1, nec 7-24s-8w, Miss 3748 ft, Vi 4080 ft, Simp 4117 ft, Arb 4172 ft, abnd 4227 ft.

Rice County—Failure: Davisson's Stout 1, sw se sw 8-21s-9w, Lans 3085 ft, Vi 3290 ft, Simp 3325 ft, Arb 3387 ft, abnd 3425 ft.

Saline County—Failure: Phillips' Sawn 1, ne ne nw 7-15s-1w, Lans 2017 ft, Miss 2678 ft, Vi 3286 ft, Simp 3373 ft, Arb 3451 ft, abnd 3481 ft.

Sedgwick County—Failure: Sohio's Limebur 1, ne se sw 21-27s-3w, Vi 4150 ft, Simp 4164 ft, Arb 4265 ft, abnd 4285 ft.

Sheridan County—Failure: Derby Oil's Flagler 1, nec 7-8s-26w, Miss 4749 ft, Arb 4812 ft, abnd 4820 ft.

KENTUCKY WILDCATS

Daviess County — Failure: Miller et al's Payne 1, 18-O-27, abnd 2083 ft.

Hopkins County—Failure: Kentucky Nat. Gas' Felker 1, 9-J-21, abnd 1155 ft.

Muhlenberg County—Failure: Ashland O&R Co. et al's Preddy 1, 6-J-31, abnd 1744 ft.

Ohio County—Failures: Carter's Hines 1, 4-J-32, abnd 2281 ft.

Ruwalt's Smears 1, 1-L-31, abnd 1903 ft.

May et al's Phillips 1, 1-M-32, abnd 697 ft.

NORTH LOUISIANA WILDCATS

Bossier Parish — Failure: O. F. Shaver's Gaines 1, 8-21-13, abnd 1340 ft.

DeSoto Parish—Failure: Ce-Beth Oil Co.'s E. P. Lee 1, 4-13-13, abnd 2833 ft.

LaSalle Parish—Failure: Placid Oil Co.'s Tremont Lbr. Co. 1, 14-9-2, near Tullos, abnd 12,002 ft.

SOUTH LOUISIANA WILDCATS

Cameron Parish — Failure: Continental's State-Calcasieu Lake No. 50-1, 6995 w 453 s of nec 1-14s-9w, Calcasieu Lake Dome area, abnd 7802 ft.

St. James Parish—College Point Discovery: Humble's Mrs. Rosa Roussell Keller et al 1, start nwc sect 30 go sly on wl 6109 ft th ely at ra to lcn in 31-12s-4e, perf 35 shots 10,758-65 ft, flow 8.56 bbls 46.5-gr oil in hr, ¼-in, td 10,893 ft.

SOUTH LOUISIANA NEW PAY

St. Martin Parish—St. Martinville Discovery: Continental-Standard of Kansas' Standard of Kansas-Fee 2, start nec sect 137 go 1550 nw alg sect line th sw at ra 330 to lcn in 137-10s-6e, 1st hole 10,042 ft, pb&st 9410 ft, perf 9734-44 ft, flow 39 bbls 51.8-gr, 10/64-in, td 9960 ft.

MICHIGAN WILDCATS

Huron County—Failure: C. W. Teater's Clark 1, nw nw nw 14-18n-13e, abnd 2025 ft.

Mecosta County—Failure: H. L. Wadsworth's Sarns 1, se nw se 7-13n-10w, Dundee 3207 ft, abnd 3307 ft.

Montcalm County—Failure: Allegan Pipe & Supply Co.'s Martens 1, nw nw nw 11-10n-8w, Dundee 3246 ft, abnd 3260 ft.

Ottawa County—Failure: P. K. deGenther's Bonner 1, sw sw se 6-7n-13w, abnd 1983 ft.

Van Buren County—Failure: Clapsaddle Drilling Co.'s Sikes 1, n½ se sw 18-4s-16w, abnd 860 ft.

MISSISSIPPI WILDCATS

Adams County — Failure: Humble's Ida Stowers, se se 9-8-2, abnd 8729 ft.

Franklin County—Failure: Placid Oil Co.'s H. H. Crosby 1, 33-7-1, abnd 10,690 ft.

Jasper County—Failure: Angle & Angle's Masonite 1, c sw sw 31-3-11, abnd 6081 ft.

Smith County—Failures: Exploro Corp.'s H. D. Stringer 1, nw se 5-10-13, abnd 1523 ft.

Southport Petroleum Co.'s 1. P. LaRue 1, ne ne 10-1-9, abnd 7753 ft.

Yazoo County — Failures: Vaughey &

Be sure to check the . . .

TRADING POST SECTION

on page 68 of this issue

"USED EQUIPMENT FOR SALE"

"EQUIPMENT WANTED TO BUY"

"HELP WANTED"

"POSITIONS WANTED"

and others that you may find of interest.

Vaughey's Sallie Ray 1, c nw sw 24-11-2, abnd 6663 ft.

Plains Producing Co.-Bunte Oil Co.'s Lawrence King 1, c se nw 29-12-1, abnd 7316 ft.

OKLAHOMA WILDCATS

Creek County—Gas Discovery: Sinclair Prairie's Goff 1, ne sw sw 14-4n-7e, 3114-26 ft, flow 1,900,000 gas, sip 1160 lbs, td 3232 ft.

Garvin County—Failure: Roodhouse's Harris 1, nw nw sw 23-3n-1e, abnd 3634 ft.

Garvin County—Oil Discovery: Continental's Parks 1, se ne se 28-4n-1w, Vi 4401 ft, perf 4468-4503 ft, flow thru tbg 18 bbls 500,000 gas, td 4870 ft.

Grady County—Gas Discovery: Okla Nat'l Gas Co.'s Rider 1, ne ne se 15-5n-8w, td 6270 ft, pb & perf 20 shots 3101-05 ft, 50 shots 3167-81 ft, 60 shots 3204-21 ft, flow 6,000,000 gas.

Kiowa County—Failures: Miller et al's Webb 1, nw nw ne 34-1n-18w, abnd 3000 ft.

McIntyre's Hudman 1, nw nw nw 10-6n-16w, Oil Creek 1750 ft, abnd 1785 ft.

Logan County—Oil Discovery: Phillips' Cavin 1, ne nw 32-15n-4w, Hunton 6794 ft, perf 6796-6856 ft, flow 445 bbls, td 6848 ft.

WEST TEXAS NEW PAY TEST

Reagan County—Superior Failure: Superior of Cal.-Wiggins & Hyde's University 1-B, se se se sec 12, blk 1, ⅝-mi sw of 3175-ft disc and scheduled 10,000-ft test, structurally low, abnd 4535 ft.

WEST TEXAS OUTPOSTS

Cochran County—NW Slaughter Failure: Helmerich & Payne's Wright 1, 660 ft out sec lab 19, Lge 97, Brewster CSL, 2⅓ miles nw of prod, elev 3751 ft, San Andres 4000 ft, pump 369 bbls 31.4-gr, 15,000 gals acid 4905-21 ft.

Howard County—Morita Extension: J. B. Hawley Jr.-Northern Ordnance's Guitar 1, nw ne sw sec 2, blk A, Bauer-Cockrell sur 1½-mi se of prod, elev 2514 ft, pump 31 bbls 27-gr, 4 bbls wtr, shot 1270 qts San Andres 3150-3225 ft.

Howard County—Moore Extension: J. B. Hawley Jr.-Northern Ordnance's Allison 1, 1488 ft wel 2639 ft snl T&P Ry. 6, blk 33, T-1-S, 1¾ mi n prod, elev 2436 ft, pump 30 bbls 29-gr oil, 5 bbls wtr, shot 1080 qts 3061-3134 ft.

SOUTH CENTRAL TEXAS WILDCAT

Bexar County—Failure: R. E. Hildebrand's Fee 1, 2094 fr nl 1576 fr el 763-ac tr, Rafael Aldrete Gr, Del Rio 798-846, Edwards 846-903, water well, td 1400 ft.

SOUTHWEST TEXAS WILDCATS

Duval County—Discovery: Harvey & Henderson's J. F. Welder Est. 1, 330 fr wl 10,230 fr nl S. Alexander sur 102 on 540-ac lse, Jackson 1535 ft, Cole 1687 ft, sd 2069 ft, pump 62.48 bbls, td 2076 ft.

Jim Hogg County—Failure: Harrison & Daubert's W. H. Stroman 2, 160-ac lse, El Sordo Gr, abnd 3759 ft.

Starr County—Failures: Humble's R. E. Margo et ux 1, 660 fr el 1980 fr sl HE&WT sur 337, abnd 5029 ft.

British American's Marcelina G. de Salinas 1, 330 se&swl blk 23, 40-ac lse, M. G. de Salinas 1126-ac tr in La Sacatosa gr, abnd 2507 ft.

LOWER TEXAS COAST WILDCATS

Brooks County—Discovery: Sun's C. Boedeker-State A-3, 467 fr s&wl R. Guzman sur 16 on 1798-ac lse, sd 6137 ft, perf 6160-67 ft, flow 1,072,000 gas spray cond, 5/32-in, td 7235 ft.

Jim Wells County—Failure: Halmer Oil Corp.'s Dora Blake 1, 330 fr sl blk 4 660 fr el 400-ac lse, 9600 fr sl 7200 fr el L. Trinidad sur A-300, abnd 5930 ft.

Kenedy County—Failure: Humble's Chas. M. Armstrong 1, 14,395 s of nl 5990 e of cl Missouri Pacific RR on 49,396-ac lse, La Barreta Gr, abnd 8507 ft.

Live Oak County—Failure: Henderson Couat's T. E. Nelson 1, 660 fr sl 1980 fr el 1513-ac lse 660 fr sl Guadalupe Braba sur 28, abnd 7015 ft.

Nueces County—Failure: Tom Graham's H. P. Wagner Unit 3, 467 fr el 532.6 fr nl 432 fr sl 94-ac lse, G. H. Paul subdvn lot 50, abnd 7350 ft.

Refugio County—Failure: J. C. Wynne et al's J. Zarsky 1, 467 fr n&el 85-ac lse 1800 fr nl 27,800 fr wl Antonio de la Vina sur, abnd 6515 ft.

San Patricio County—Failures: Southern Minerals Corp.'s C. O. Watson 1, 467 fr el 2173 fr nl sect 46, 568-ac lse, G. H. Paul subdvn Welder Rch, abnd 6512 ft.

Plymouth Oil Co.'s S. F. Jackson 1, 330 fr w&nl fract sect 43-A, Taft Farm Lands, abnd 9450 ft.

Victoria County—Pridham Lake Discovery: Kingwood Oil Co.'s Mrs. Addie Wilden 1, 660 fr ne&nwl 183.9-ac lse, blk 1, perf 4770-74 ft, flow 107.6 bbls 24-gr, 9/64-in, td 4907 ft.

TEXAS GULF COAST WILDCATS

San Jacinto County—Failures: Humble's T. S. Foster Est. 1, 1450 se of nwl 3865 sw of nel 2630 ne of m/swly/swl of Linda Saunders sur A-384, Cold Spring area, abnd sh and sd 8182 ft.

Stanolind O&G's T. S. Falvey 1, 660 fr n&el of 493.5-ac lse 8200 fr nl 9100 fr wl J. F. de Rumayer sur A-47, abnd sdy sh 9759 ft.

EAST TEXAS WILDCATS

Henderson County—Failure: E. B. Germany & Sons' Donsell 1, 4000 ft wel 2850 ft snl I. Vincente Mitchell sur, elev 393 ft, Pecan chalk 2144-2260 ft, Austin 3030-3510 ft, Woodbine 3934 ft, abnd in Georgetown 5405 ft.

Kaufman County—Failure: Mae Belcher et al's Nalls 1, 330 ft out n cor 40-ac lse, E. W. Guthrie sur, elev 416 ft, Austin chalk 1195-1705 ft, Woodbine 2135 ft, abnd 2170 ft.

Navarro County—Failure: John W. Hooser-J. H. Burke's Johnson 1, 530 ft fr swl 2800 ft fr nwl J. P. Hardin sur, elev 382 ft, Austin chalk 2680-3190 ft, abnd Eagleford sh 3654 ft.

TEXAS PANHANDLE WILDCAT

Dallam County—Failure: Pure's Sneed 1, c ne ne sec 13, blk 18, CSL, elev 4013 ft, granite 6769 ft, abnd 6779 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: D. H. Bolin et al's Abercrombie 1-G, 750 ft s 750 ft w of nwc blk 159, but in S. Abercrombie sur A-752, abnd 1415 ft.

Cochran & Cain's Central Bank & Trust Co. 1, 150 ft wel 1026 ft nsl of e-60 ac of blk 51, Meade "LM" Pasture sur, abnd 1432 ft.

Rathke Oil Co.'s Harmel 1-B, 330 ft snl 800 ft ewl blk 44, Meade "LM" Pasture sur, abnd 1561 ft.

E. P. Griffin and Frank Wood's Griffin 1, nw nw ne sec 9, Palo Pinto CSL sur, Coleman Junc, 538 ft, KMA 4112 ft, Strawn 4462 ft, abnd 4505 ft.

Staley Oil Co.'s Harrison 1, 450 ft snl 1500 ft ewl sec 7, blk 5, Clark-Plumb sur, abnd 1106 ft.

Frank Wood-A. R. Dillard's Strange-West 1, 1350 ft ewl 1900 ft snl sec 32, blk 5, Clark-Plumb sur, abnd 1130 ft.

Young County—Oil Discovery: Kerlyn Oil Co.-Phillips' Clarida 1, 300 ft wel 900 ft snl W. A. Nicholson sur A-1697, 1.7 mi nw of Miss prod at same subsea, elev 1158 ft, Bend 4257 ft, Marble Falls 4705 ft, Barnett 5062 ft, Miss 5116 ft, Ellenburger 5305 ft, flow 816 bbls 42.5-gr, gas-oil 670/1, Miss perf 5263-69½ ft, td 5910 ft.

NORTH TEXAS WILDCAT DEEPENED

Denton County—Failure: Northern Ordnance's Donald 1, 330 ft out swc Geo. M. Dial sur A-379, otd 2618 ft, Ellenburger 2460 ft, abnd 3005 ft.

NORTH TEXAS

Hardeman County: Humble's Emma T. Marshall 1, 1927 ft nsl 660 ft ewl W&NW Ry. 240, blk H, lcn 8000-ft test.

Haskell County: Humble's S. W. Scott 1, 660 ft out nwc 690-ac tr, sec 20, C. W. Brooks sur 5, mi se Lawson pool, lcn Palo Pinto lime test.

Montague County: J. A. Chapman et al's Sam Daube 1, 450 ft ewl 330 ft snl Newton Kimbro sur A-405, lcn 6700-ft Ellenburger test.

United States Wildcat Starts

ARKANSAS

Ashley County: Union Producing Co.'s Crossett Lbr. Co. F-1, 668 e 576 n fr swc 24-19-7, ru.

Calhoun County: John T. O'Neil's Gaughan 1, c ne ne 15-14-16, lcn.

Columbia County: McAlester Fuel Oil Co.'s J. C. Luck 1, 9-16-20, lcn.

Miller County: Carter Oil Co.'s T. J. Beauford 1, 430 n 347 w fr sec nw se 32-16-26, lcn.

Ouachita County: Lechner & Hill's J. W. Reynolds 1, ne ne sw 21-14-17, mir.

Union County: Crabtree & Gayle's Randolph Smith 1, c ne ne ne 15-14-16, Hibank area, lcn.

Curtis Kinard's Mary Finley 1, se sw sw 12-17-14, Old Rainbow City area, dr 200 ft.

D. V. Lacefield's Union Sawmill Co. D-3, c sw nw ne 13-18-14, ru.

CALIFORNIA

Fresno County: Amerada's California Lands 76-15, nw sw se 15-17-18, se Helm area, rig.

Superior's Brackney 68-30, se sw se 30-15-17, San Joaquin area, lcn.

Kern County: Pacific Western Oil Corp.'s Yale Richardson 1, nw sw se 13-3-21, S. Mountain area, lcn.

Standard of Cal.'s McPhee 2-1, ne nw nw 36-29-21, McKittrick area, mim.

Standard of Cal.'s Robbins Comm. 25-35, ne nw sw 35-29-26, Strand area, mim.

Kings County: Standard of Cal.'s 6-11, sw sw se 17-24-18, Pyramid Hills area, lcn.

Standard of Cal.'s 1-6, nw nw sw 21-24-18, Pyramid Hills area, lcn.

Santa Barbara County: Standard of Cal.'s Hollister Estate 1, sw sw se 35-5-33, Gaviota area, mim.

Tulare County: L. B. Tannehill's 1, sw sw ne 22-23-27, Terra Bella area, lcn.

FLORIDA

Collier County: Humble's Gulf Coast Realty 3, c sw se 28-48-30, lcn.

Gulf County: Pure's C. C. Hopkins 1, c sw ne 21-6-9, lcn.

Leon County: Stanolind's St. Joe Paper Co. 1, 600 s 600 w fr nec 15-2-2, lcn.

GEORGIA

Decatur County: H. L. Hunt's Metcalf 1, c ne land lot 260, land dist 21, spud.

ILLINOIS

Clay County: Williams' Cash 1, se sw sw 25-3n-5e, lcn.

Duncan's McGee 1, nw sw se 24-5n-6e, lcn.

Douglas County: Ohio's Show 1, sw sw sw 36-16n-8e, lcn.

Effingham County: Kingwood et al's Schwartz 1, sw nw sw 23-6n-7e, lcn.

Fayette County: Myers' Cocagne 1, ne sw se 19-6n-1e, dr.

Franklin County: Randall et al's U. S. Coal & Coke 1, sw sw 14-5s-2e, dr 114 ft.

Ring's Payne 1, se ne nw 26-5s-3e, lcn.

Jefferson County: Inland Oil et al's Crouch 1, se se ne 1-2s-4e, lcn.

Lawrence County: Big Four Oil et al's Summer-Guggs Comm 1, ne ne ne 13-3n-12w, lcn.

Madison County: Baudette's Holtman 1, se ne sw 5-4n-6w, lcn.

Montgomery County: Northern Ordnance's Tubbs 1, nw se nw 22-9n-4w, lcn.

Richland County: Phillips' Jennings 1, ne ne se 6-2n-10e, lcn.

Jackson's McDonald 1, sw sw sw 14-2n-10e, lcn.

Cardinal Oil's Miller 1, nw se sw 2-3n-9e, lcn.

Wabash County: Fox et al's Thompson 2, sw sw sw 3-3s-13w, dr 279 ft.

Washington County: Smokey Oil's McWilliams 1, nw nw se 28-2s-2w, lcn.

White County: Gilllison's Storms 1, ne nw sw 2-6s-19e, lcn.

Williamson County: Freeman Coal's Browning 1, ne nw ne 8-8s-2e, lcn.

KANSAS

Butler County: Smith et al's Evans 1, sw se se 3-23s-8e, lcn.

Grallup et al's Kenyon 1, sec Lot 26, 19-24s-8e, lcn.

Ellsworth County: Texas Co.'s Sauberli 1, nwc 19-17s-8w, dr 430 ft.

McPherson County: Derby's Ryno 1, ne nw nw 6-19s-1w, lcn.

Norton County: Allen et al's Porter 1, swc nw 26-3s-24w, dr 710 ft.

Osborne County: Stanolind's Ahrens 1, ne ne se 30-9s-14w, lcn.

Pratt County: Transwestern's Strait 1, se ne sw 28-26s-13w, woc.

Texas Co.'s Toland 1, cne se 12-26s-14w, woc.

Reno County: Phillips' Tremble 1, sw sw ne 32-25s-8w, lcn.

Trego County: Phillips' Eunice 1, sw sw se 21-11s-22w, lcn.

Sinclair Prairie's O'Tool 1, sec 26-14s-25w, lcn.

KENTUCKY

Butler County: Green et al's Arnold 1, 15-H-32, lcn.

Caldwell County: Sohio et al's Vinson 1, 16-J-20, lcn.

Union County: Sohio's Tucker 1, 14-O-20, lcn.

Webster County: Ryan Oil et al's Jenkins 1, 18-L-19, lcn.

NORTH LOUISIANA

Caldwell Parish: Atlantic's Louisiana Central Lbr. Co. 1, 600 s 2001 e fr nwc 6-13-2, lcn.

Claiborne Parish: Magnolia's McDonald 1, sw ne 2-20-5, lcn.

DeSoto Parish: Triangle Drilling Co.'s Frierson 2, 33-14-13, spd.

Sabine Parish: Lyons & Prentiss' 4-L Lumber Co. 1, ne nw 25-6-12, lcn.

West Carroll Parish: Pure's Letha Sanders Costello 1, 1650 w 990 s fr nec 27-23-10, lcn.

SOUTH LOUISIANA

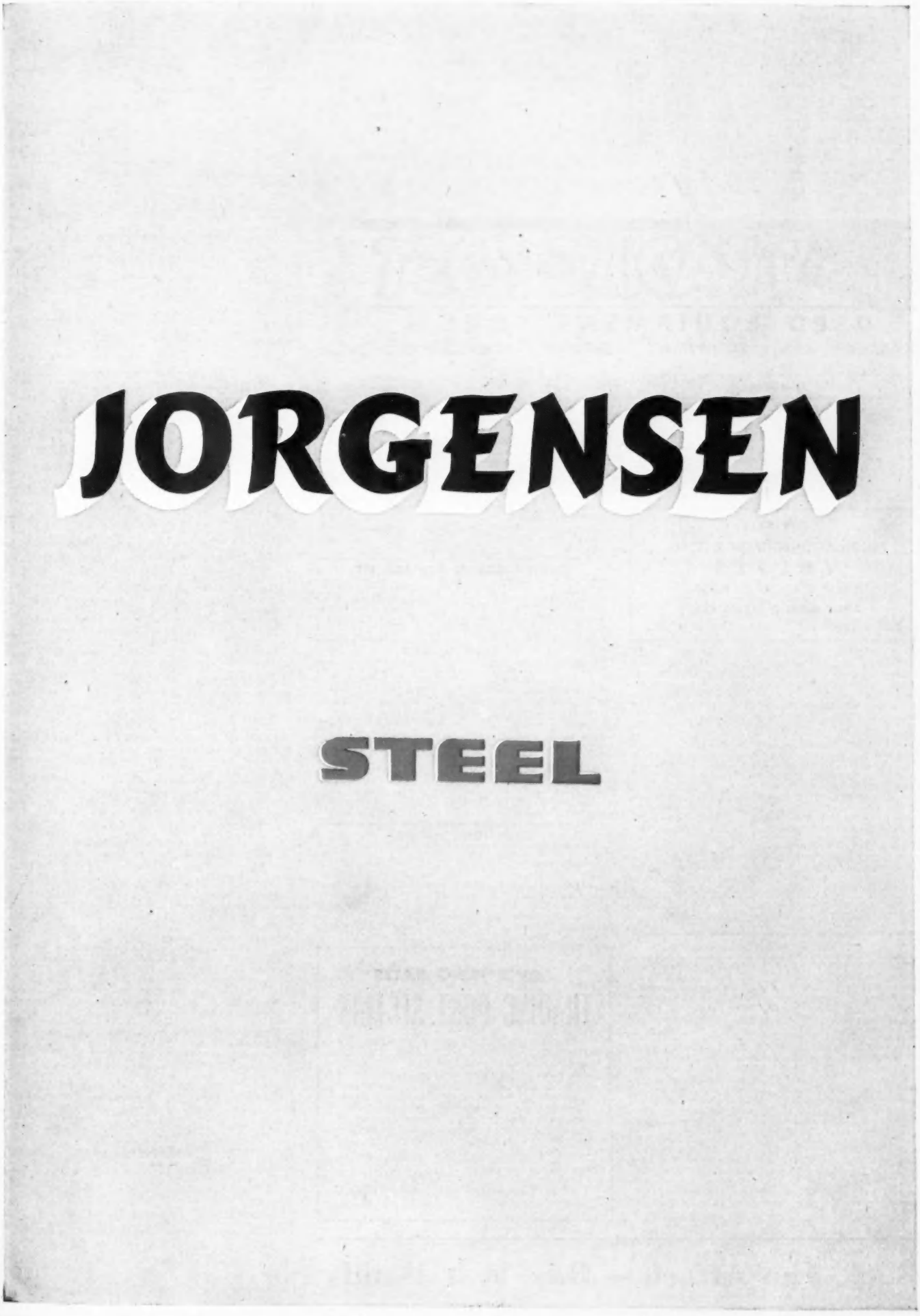
Cameron Parish: Stanolind's Jos. Bishop 1, 660 s&e of nwc 5-15s-8w, Creole area, lcn 10,000-ft test.

MISSISSIPPI

Adams County: Humble's Stowers A-1, sec 9-8-2, lcn.

The California Co.'s M. T. Hickinbotham 1, 52-7-1, begin at intersect Cannonsburg rd and n row U. S. 84, th s 71° 2 min w 6480 ft to lcn.

Jones County: Sinclair Wyoming Oil Co.'s


JORGENSEN
STEEL

Wausaw Southern Lbr. Co. 2, 330 n 660 w fr sec se nw 25-8-10, lcn.

Stone County: Harry I. Morgan's Wilmer Lbr. Co. 1, c sw nw 1-3-11, lcn.

MICHIGAN

Genesee County: Tambly Development Co.'s Jordan 1, sw sw nw 29-9n-5e, rig.

Isabella County: C. W. Collin's Weideman 1, sw sw ne 27-14n-5w, lcn.

Lake County: V. I. Cilley's Peiser 1, w½ nw nw 13-18n-12w, lcn.

Montcalm County: Leslie T. Barber's Hovinga 1, sw ne nw 5-11n-6w, rig.

Montmorency County: E. R. Morris' Carrier 1, se ne se 30-30n-4e, lcn.

Sanilac County: Swan King Oil Co.'s Marshall 1, se ne nw 26-9n-15e, lcn.

NEW MEXICO

Lea County: Stanolind's State 1-K, c se se 31-24s-34e, lcn 4000-ft San Andres test.

OKLAHOMA

Carter County: Pure's Genn 1, nw nw nw 7-3s-2e, c&p.

Garfield County: Adkin's Navotny 1, sw nw nw 32-24n-3w, bldg rig.

Garvin County: Lausen's Freeman 1, sw ne ne 36-1n-1w, dr 50 ft.

Grady County: Magnolia's Cunningham 1, se se 33-5n-6w, c&p.

Hughes County: Bartlett et al's Smith 1, nw sw ne 27-6n-8e, rur.

Jefferson County: Husted et al's Seay 1, nw se nw 18-6s-5w, rur.

Johnston County: Pace et al's Suckky 1, se sw nw 26-2s-7e, dr 1510 ft.

Kay County: Kan-O-Tex's Hansen 1, nw sw sw 17-27n-2e, dr 1532 ft.

Okmulgee County: Long et al's Anthony 1, sw sw sw 33-16n-12e, dr 108 ft.

Osage County: Phillips et al's Osage 1, ne ne sw 7-23n-4e, lcn.

Texas County: Phillips' Hazel 1, sw sw ne 35-1n-13ecm, lcn.

Washita County: Pure's Redling 1, sw sw ne 8-8n-18w, mim.

WEST TEXAS

Lamb County: Woodley Pet. Co.'s W. E. Bird 1, c nw se sec 55, blk T, T. A. Thomason sur, lcn 7250-ft Clear Fork test.

Mitchell County: Humble's Pruett Keel 1, c sw se T&P Ry. 22, blk 27, lcn for Ellenburger test.

Pecos County: Phillips Pet. Co.'s Powell-Powe 1, 4441 ft ewl and 660 ft nsl of n½ T.M.R.R. Co. 3, blk OW, lcn 11,000-ft Ellenburger test.

Yoakum County: Honolulu Oil Corp. et al's T. Hertel 1, c se nw sec 264, blk D, J. H. Gibson sur, lcn 5500-ft test.

SOUTH CENTRAL TEXAS

Maverick County: Tex. Gas and Utilities Co.'s Hal Mangum 1, 4512 fr wl 1637 fr sl sect 71, I&GN sur, blk 7, lcn 6000-ft test.

SOUTHWEST TEXAS

Duvall County: J. W. Gorman's A. Herbst 3, 603 fr m/ely/el 1263 s of m/sly/nl H&GN sur 71, lcn.

Hewitt & Dougherty's Duwell Co. 1, 660 fr swl 1980 fr nwl 540-ac lse, J. Poitevent sur 394, dr 3050 ft.

R. F. Schoofield's Martela G. Peal et al 1, 1650 fr wl 330 fr nl BS&F sur 790, lcn 4000-ft test.

Starr County: Bishop & Moss' Pedro Lopez 1, 545 fr el 467 fr sl sh 37, Jose Salvador de la Garza porc 88, lcn.

Sun's M. S. de Flores et al 1, 467 fr e&nl tr 4 porc 40, Juris of Renosa Gr, 138-ac tr, lcn.

LOWER TEXAS COAST

Bee County: Magnolia's W. E. Erp 1, 330 fr s&wl 1349-ac lse, J. B. Atkins sur, lcn 8000-ft test.

Brooks County: Sun's D. J. Sullivan et al 2, 1400 fr wl 11,500 fr sl 15,732-ac lse, in Loma Blanca sur, lcn.

Goliad County: Sun's R. A. Thompson 1, 467 fr wl 12,346 fr swc 3800 fr nwc 1537-ac lse, Ignacio Guajardo sur, lcn 11,000-ft test.

Refugio County: Hewitt & Dougherty's B. D. Rooke A-11, 467 e of wl blk 28 467 n of Aransas River, elev 19 ft, lcn 7500-ft test.

Victoria County: Kingwood Oil Co.'s M. F. Bass 1, 330 fr sw&sel 73-ac lse, lot 6, nw Victoria twnshp, mim.

TEXAS GULF COAST

Ft. Bend County: Texas Co.'s Ernest Zwahr 1, 660 fr ne&sel 40-ac lse, 1980 fr sel 660 fr nel sect 41, H&TC sur A-225, Needville area, lcn 8000-ft test.

Matagorda County: United North & South Dev. Co.'s Buckner Orphans Home 1, 660 e of e bank old channel of Colorado River 660 fr nl 570 fr el 40-ac lse, A. J. Smalley Lge, lcn 8500-ft test.

TEXAS PANHANDLE

Deaf Smith County: Humble's J. W. Hyslop 1, c nw se 18-3n-1e, lcn 8000-ft Ellenburger test.

EAST TEXAS

Rusk County: John W. Merritt et al's J. W. Waggoner 1, 660 fr nsl 970 ft ewl of 100-ac tr, or 1000 ft wel 1300 ft fr m/n/nl Thomas Dalby sur, mim for Woodbine test.

Van Zandt County: Humble's B. W. Bruce 1, 660 ft fr se m/s/swl of 120.6-ac tr, or 3400 ft fr nel and 3800 ft fr sel J. Saligna sur, Travis Peak test, dr 1760 ft.

Wood County: Sinclair Prairie's Minnie Collins 1, 660 ft out nwc 107-ac tr, or 1500 ft wel 5500 ft nsl of Maria Rentarez sur A-481, lcn 12,000-ft Travis Peak test.

EAST TEXAS BORDER COUNTIES

Panola County: Skelly's Lewis Werner Sawmill Co. 1, 660 e fr wl 6300 n fr swl Willis Vaughan sur, 2 mi n Deadwood, mir.

WESTERN CANADA

Alberta Foothills—Highwood: Transcontinent Oil Co.'s No. 1, sw lsd 4 36-18-3w5th, lcn.

☆

ROBERT Z. MENDENHALL, former scout for Ohio Oil Company, has joined Gulf Oil Corporation as scout for the south portion of the West Texas Permian Basin and the Edwards Plateau with headquarters at Junction, Texas.

R. B. PAXSON has been transferred from Houston to Tulsa, to head Sunray Oil Company's newly organized geological department.

The Oil Weekly's TRADING POST

USED EQUIPMENT FORUM

CLASSIFIED ADS . . . EQUIPMENT . . . SERVICES . . . PERSONNEL

FOR SALE

■ **FOR SALE: One No. 19 Armstrong Converted Spudder with complete string drilling tools. Price on application. P.O. Box 186, Bowling Green, Ky.**

■ **FOR SALE: 72 H.P. Continental Red Seal B405-Twin Disc Clutch, extra pulleys and belts, natural gas or gasoline, practically new. Mr. Groves, C-1616, Houston, Texas.**

FOR SALE

RECONDITIONED IRON & STEEL

VALVES

LARGE STOCK OF FITTINGS

APEX IRON & METAL CO.

2204 S. Laflin St. Chicago 8, Ill.

■ **One 122'x24' Wertzberger pipe leg steel Derrick w/Std. 7' substructure; One Griscom Russell vapor condenser, complete; One Royal water softener; One 5-sheave 62" Reagan travelling block. Falcon Seaboard Drilling Company, Phone Charter 4-2701, 551 Mellie Esperson Bldg., Houston 2, Texas.**

■ For Sale by East Texas Independent Producer: Two 25-h.p. IDECO pumping units complete with Fairbanks-Morse 20-h.p. Type Z engines, 11,000 feet 5½" 14-lb. Seamless casing, 2,400 feet 7" 24-lb. Seamless casing, 2" and 2½" tubing, sucker rods, 87' galvanized and painted derricks, lease tanks, and flow lines. All in excellent condition and reasonably priced. Address: Box 66, c/o The Oil Weekly, Houston, Texas.

■ FOR SALE: 10,000 feet 3½" O.D. 4.5-lb. used plain end line pipe in 40-ft. lengths; 5,000 feet 7" O.D. 17-lb. used plain end line pipe in 20-ft. lengths. Address Box 73, c/o The Oil Weekly, Houston, Texas.

■ FOR SALE: Model R-6-U, 140 horsepower Climax Engine. Box 62, McCamey, Texas.

HELP WANTED

■ **WANTED: OIL WELL CEMENTER with at least three years cable tool and rotary experience. Permanent position with good future. Statement of availability necessary and draft status. Write Dick Allen, Well Service, Inc., 1901 Kanawha Valley Bldg., Charleston 1, West Virginia.**

■ **WANTED: PETROLEUM ENGINEERS and GEOLOGISTS, with field experience. Excellent opportunity with major oil company operating in Venezuela. Permanent positions. Engineers should be experienced in well completion practice and equipment. Mud control experience valuable. Give age, educational background, exp. and marital status. Address: Box 70, c/o The Oil Weekly, Houston, Texas.**

■ Sales Engineer wanted by old established manufacturer selling to oil, gas and water industry. Permanent salary position. Must be hard worker. Houston headquarters. Give age, experience, references, salary desired, etc. Address: Box 76, c/o The Oil Weekly, Houston, Texas.

■ WANTED: Sales engineer to represent us in Mid-Continent territory to promote sale of Unit Pumpers. State age, experience, qualifications in first letter. Address: Box 77, c/o The Oil Weekly, Houston, Texas.

NOTICES

■ **CAPITAL SEEKERS: Interested in raising $25,000 or more for a legitimate project should write to Amster Leonard, Fox Building, Detroit 1, Michigan.**

■ WANTED: Financial assistance in drilling oil and gas wells 3000 feet deep on 80-acre lease in producing field, Stephens County, Oklahoma. Write for details. Address: Box 75, c/o The Oil Weekly, Houston, Texas.

LEASES, DRILLING ACREAGE, ETC.

■ DRILLING CONTRACT: Arizona group seeks connection with a reliable drilling company to drill a test well near Holbrook, Arizona. Estimated depth: 4000 feet. Write to: Box 4039, Los Angeles 24, Calif.

WANTED TO BUY

■ **AM INTERESTED in buying a small power complete consisting of one 25 horsepower Superior engine and four underpull jacks. What have you? Address H. J. Kerps, Route 2, Box 227, Wilson, Oklahoma.**

■ **DRILL PIPE for rent, sizes 2⅞" to 4½". Call W-6-4484, T-6268 or J-2-1466. We Buy Drill Pipe. Merrill-Stone, P.O. Box 1261, Houston, Texas.**

■ WANTED: Vacuum Lubricating Plant, 100 to 500 bbls. capacity. Give full description including age, condition, location, and best cash price. Address: Box 74, c/o The Oil Weekly, Houston, Texas.

SITUATIONS WANTED

■ **Landman and Scout desires connection. Fifteen years experience with two Major Companies in Texas and Louisiana Coast, Mississippi and Alabama. Now employed in shipyard but can obtain Referral card. Am 48 years old, married with one child. Will furnish reference from past employers and fellow scouts. Address: 72, c/o The Oil Weekly, Houston, Texas.**

ADVERTISING RATES

TRADING POST SECTION

Regular classified advertisements for this special section, set in type this size without border, take flat rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, THE OIL WEEKLY
P. O. Box 2608 Houston 1, Texas

Back The Attack — Buy War Bonds

Squeaks from the Bull Wheel

Two of a Kind

Two men were making the first air trips of their lives. The plane touched down at St. Louis, and a little red truck sped out to refuel it. The plane landed again at Cleveland, and again a little red truck dashed up. The third stop was Albany, and the same thing happened.

The first of the two men looked at his watch and turned to his companion.

"This plane makes wonderful time."

"Yep, and that little red truck ain't doin' bad, either."

The Little Woman

A woman when launching her first ship was a little nervous. She turned to the shipyard manager standing beside her, and asked: "How hard do I have to hit it to knock it into the water?"

Progress Report

"How are you getting along at home while your wife's away?"

"Fine. I've reached the height of efficiency. I can put on my socks from either end."

No Encore

Two bullies became involved in a bitter dispute. There was an exchange of insults, and honor could not be satisfied without a duel.

On the field of honor, after lengthy preliminaries had been concluded, the two antagonists discharged their firearms—without effect.

"Well gentlemen," suggested one of the seconds to the duelists, "now that honor has been satisfied, suppose you shake hands?"

"'Tain't necessary!" snapped the other second. "Their hands have been shaking now for half an hour."

Disillusioning

"When did you first become acquainted with your husband?"

"The first time I asked him for money after we were married."

Mutual

Gob: "I don't trust you too far."

Gal: "I don't trust you too near!"

Ike Junior

Use the word triangle in a sentence.

If fish don't bite on grasshoppers, triangle worms.

A Word to—

"We can't have any fun tonight. All I have is small change."

"Well, what do you think it takes to send Junior to the movies, a five dollar bill?"

Definitely

Does the moon influence the tide?

I don't know, honey, but it sure influences the untied.

Double Talk

"Is the hula dancer in her dressing room?"

"She's 'round at the rear."

"Yes, I know that, but is she in her room?"

Cigar Facts

"I usually smoke that brand in the can."

"And that's a good place to smoke them."

Tough

"So you think you're tough! Look, mug, I was born with brass knuckles on both hands."

"So? Well I wasn't born—I was quarried."

Serial Gasoline Coupons Now Being Counterfeited

Serially numbered gasoline ration coupons, introduced last winter by the OPA in an effort to halt the diversion of motor fuel to the black market, have already been found to be counterfeited, it was disclosed July 19.

The first counterfeit coupon was discovered in western Pennsylvania, and dealers throughout the country have been warned that they can no longer assume that all serially number coupons offered are genuine.

The fact that the counterfeit bore the designation of the Cleveland OPA region and was found in the New York region indicates that fakes may turn up in any part of the country, it was said.

Drum Deposit Mandatory

A new directive, making mandatory a requirement for deposits ranging from $2 to $10 to insure the return of metal oil drums within 20 days, has been prepared by PAW to meet a supply situation declared to be worse now than at any time during the war. The deposit is to be made every time a drum changes hands.

War Production Board orders limit the volume of drum production this year to 95 percent of the 1943 output, but shortages have been accentuated by heavy Army, Navy and lend-lease requirements.

☆

C. L. BAKER, formerly head of the geology department of Texas A. and M. College, is now regional geologist for Associated Oil Company at Sheridan, Wyoming.

OIL PRODUCING FORMS

Form 265—Report of Material Received, 50 duplicate sets to book, size 5½ x 8½

Form 267—Pipe Tally—50 duplicate sets to book, size 4¼ x 8½

Form 280—Daily Drilling Report—33 triplicate sets to book, size 5½ x 8½

Form 282—Three Tour Drilling Report with Pipe Tally, size 8½ x 11—33 triplicate drilling sets, 10 duplicate pipe Tally sets to book

Form 290—Pipe Line Run Tickets—33 triplicate sets to book, size 4½ x 7½

Shipped immediately from stock. Many other practical forms for field record keeping. Order by form number.

Completely Illustrated Catalog on Request

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Analytical and Consulting Chemist

Podbielniak Gas Analysis

Oil Field Brines, Waters and Cores

Complete Evaluation of Crude Oils

Long Distance 267. Box 132. Houston, Tex.

THE FORT WORTH LABORATORIES

Analysis of oil field brines, cores, gas, oil and minerals. Field gas testing. R. H. Fash, Vice President; Long Distance 138 823½ Monroe Street, Fort Worth, Texas

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NON-DESTRUCTIVE INSPECTION

- MAGNAFLUX
- X-RAY
- RADIUM

PORTABLE FIELD EQUIPMENT

6006 NAVIGATION BLVD.,

W. 6-6922 P. O. 1901 HOUSTON, TEXAS

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Specializing in

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Drilling Equipment Appraisal

Drilling Equipment Design

Production Equipment Appraisal

Temporary Drilling Supervision

Well Completion Supervision

DRILLING AND PETROLEUM ENGINEERING CONSULTANT

Esperson Building, Houston, Texas

Phones: P-0969 - H-0996

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Consulting Geophysicists

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Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique

GIDDENS-LANE BUILDING

SHREVEPORT, LOUISIANA

BE SURE TO CHECK . . . .

Trading Post Section

ON PAGE 66 OF THIS ISSUE

Because of the scarcity of certain types of new equipment and the fact that some operators may have a surplus of some items and a serious shortage of others, this **Used Equipment Forum** is performing a valuable service to operators in locating needed used materials or disposing of surpluses that may be needed by others.

Notes for the Equipment Buyer and User

Automatic Condensate Remover

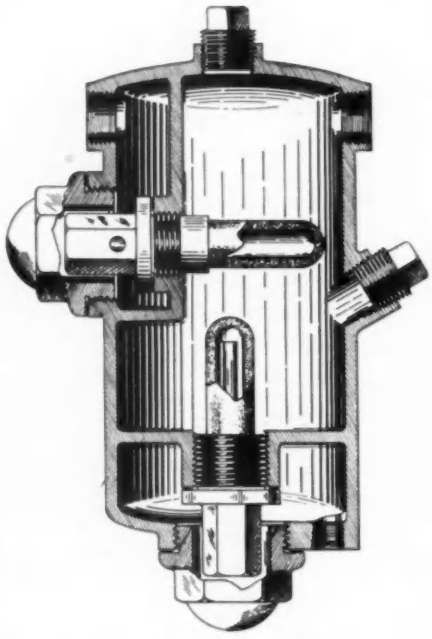
SELAS CORPORATION OF AMERICA

Selas Corporation of America, Erie Avenue and D. Street, Philadelphia 34, has developed a device for automatic and continuous liquid-gas separation for the oil and gas industry. The "Liquijector" automatically and continuously removes condensate from compressed air and gas lines.

Action is through two porous ceramic tubes, one inherently water-repellent, the other water-permeable but air-impervious.

Among applications in which the device has been used satisfactorily are pneumatic tools, atmosphere gas generators, compressors, air-actuated control systems, vapor quench lines, spray and blast equipment, and other pneumatic apparatus in which moisture may corrode the equipment or damage the work.

The basis of the product is a method for automatically separating liquid and gas phases by virtue of the surface tension of the liquid. Compressed air entering the device, passes through the first tube which is water-repellent, and is stripped of moisture by coalescence of droplets on the surface of this tube. The moisture then drops to the bottom of the unit where it passes through the second tube, without loss of air, to outside atmosphere.



Selas Condensate Remover

Metal Forging

Steel Improvement & Forge Company, Cleveland, Ohio, has published a reference data book entitled "The Improvement of Metals by Forging."

Employing charts, photographs and detail drawings, this book presents 36 pages of factual working information. It contains a fund of easy-to-find technical data on types of forgings, forging design principles, forging processes, the metallurgy of forging, including a section devoted to metal specifications and physical properties of various widely-used steels.

Step-Valve Pump

MILTON ROY PUMPS

Milton Roy Pumps, 1325 E. Mermaid Avenue, Philadelphia, Pennsylvania, has designed step-valve pump for controlled volume pumping against negative differential pressures.

Outside spring-loading provides ready adjustment for desired load. The single cover plate is readily removable and provides complete accessibility without disturbing intake or discharge piping. Freedom from air-binding is obtained with minimum restriction of passages since the pumped liquid moves in an almost straight line under the ball checks.

This type valve is available in pumps with capacities from 10 up to 1300 gallons per hour.

Dual Weld-Cleaning Tool

ATLAS WELDING ACCESSORIES COMPANY

Atlas Welding Accessories Company, 14824 Wyoming Avenue, Detroit 21, Michigan, has improved its weld-cleaning tool so that it includes a wire bristle brush and a slag removing head in one unit.

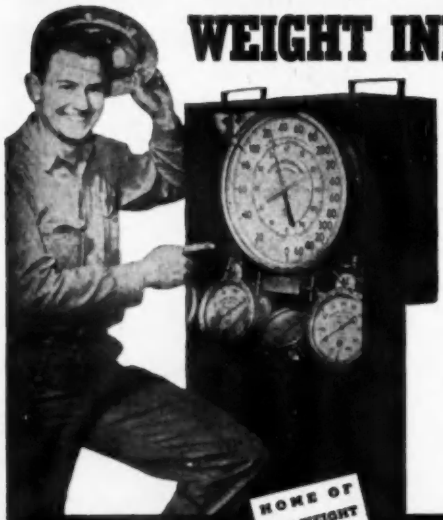
Weld-Cleaning Brush

The tool features an improved brush holder which permits removal of the brush for reversing or replacement by inserting a screw-driver at the rear end of the holder. An up and outward pry releases tension and the brush pops out. For inserting the brush, the action is reversed and the brush snaps in to a firm, rigid seat.

The spring-steel handgrip is permanently welded to the handle to eliminate the possibility of loosening or breaking.

Caterpillar Representative In Mississippi Changed

Caterpillar Tractor Company, Peoria, Illinois, announces that Stribling Machinery Company will replace Mississippi Tractor & Equipment Company as distributors of Caterpillar products in Mississippi August 1. Properties of the latter at Jackson have been purchased by W. R. and E. B. Stribling, who have been in the heavy machinery business for a number of years.



WEIGHT INDICATOR POINTS

FOR QUICK JOBS . . . MAXIMUM PORTABILITY—IT'S THE "CLIPPER"

—For shallow drilling, running tubing, setting packers and liners, fishing—wherever minimum rig-up time and maximum portability are essential, the Martin-Decker "CLIPPER" Tool Pusher Type Weight Indicator is the instrument for the job. It combines in one compact, streamlined unit complete accuracy, portability and adaptability for all drilling and production operations not requiring a chart record. Off and on the dead line in an instant, the Clipper is easily transported from rig to rig and can be used in any spot at any time . . . eliminating haphazard guesswork or estimations.

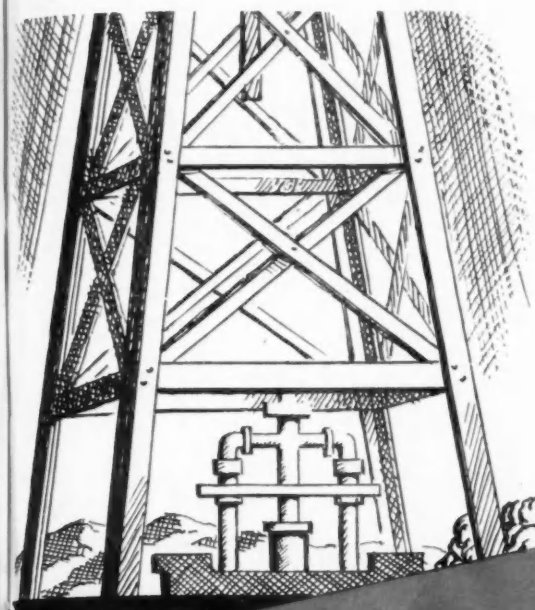
Easy to Read Extremely Accurate
Completely Self-Contained

HOME OF THE WEIGHT INDICATOR

MARTIN DECKER CORP.

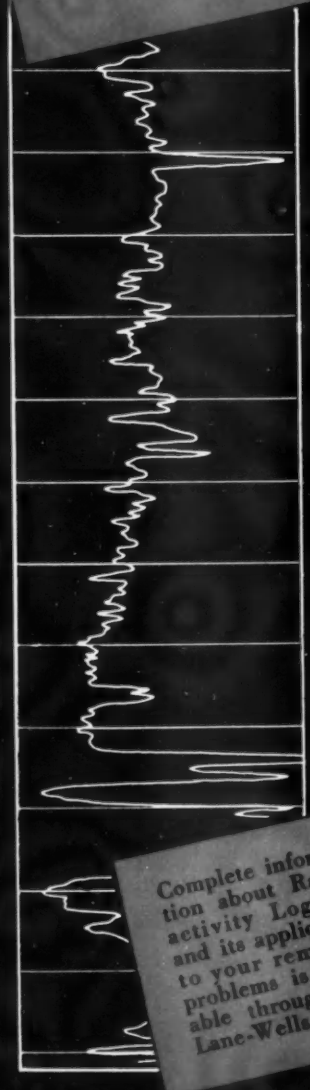
LONG BEACH, CALIFORNIA

SAN JOAQUIN VALLEY: A. F. McQUISTON, BAKERSFIELD, CALIFORNIA
MID-CONTINENT DISTRIBUTOR: REED ROLLER BIT COMPANY, HOUSTON, TEXAS



Before You Abandon Any Well— BE SURE! run a

Radioactivity Well Log



Complete information about Radioactivity Logging and its application to your remedial problems is available through any Lane-Wells Branch

Now, more than ever before, it is necessary to have all information possible about the formations traversed by a well. Radioactivity Well Logs—either Gamma Ray or Neutron Logs—can be used to establish accurately the depths of producing horizons in wells drilled prior to electrical logging. These potential zones, which may have been cased-off in the original completion, can be gun perforated and tested for secondary production. Logs are developed regardless of the nature of the well fluid and are not materially affected by multiple strings of casing.

FIGHTING Tomorrow's Tools-Today!

LANE WELLS COMPANY

Factory, General and Export Offices:
5610 South Soto Street, Los Angeles
Houston Oklahoma City
24-Hour Service • 30 Branches

Radioactivity Well Logging Under License
From Well Surveys, Inc., Tulsa, Oklahoma

DIESEL
JACKET WATER STABILIZATION

Maintain effective cooling . . . eliminate scale formation . . . prevent pitting and corrosion by stabilizing your Diesel Jacket Water. We offer reliable stabilization by intelligent application of standard methods. Phone, write, wire for further information.

25 Years Successful Experience

GULF ENGINEERING CO., INC.
"Service, Not Promises"
307 M & M BUILDING, HOUSTON, TEXAS
916 S. PETERS STREET, NEW ORLEANS, LA.

LOAD BINDERS
5 — Sizes — 5
Take from ¼" to ⅝" Chain

For details see page 810 Composite Catalog

DURBIN-DURCO
6611 Olive St. Road
ST. LOUIS 5, MO.

LET JOHN FIELD-MAN HELP YOU SOLVE YOUR NEXT WATER CONDITIONING PROBLEM!

Call
JOHN FIELD-MAN
ON YOUR NEXT WATER CONDITIONING JOB

LELAND HAMNER CO.

LELAND HAMNER CO.
P. O. Box 1065 - Capitol 9758 - Long Distance LD 2175
2211 PRESTON AVE. HOUSTON, TEXAS

Sharp Price Increase For Missouri Barite

A sharp increase in the maximum price for Missouri barite, effective July 31, was announced by the OPA July 26 in an order raising the ceiling from its former level of $7 to $7.25 per short ton to $8.50 per ton.

The increase was granted following a survey which indicated that production costs had increased to such an extent that a large part of the Missouri output would be at costs in excess of former maximum prices. The largest single use of the mineral is in the drilling of oil wells.

The new ceiling is based on a standard of 94 percent barium sulphate, with a differential of not more than 25 cents per ton for each 1 percent above or below 94 percent.

Advertisers' Index

* Indicates detailed information on products and services included in 1943-44 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

Alice Pipe & Supply Co. 60
The Louis Allis Co. ..... Insert 36-37
*American Cable Division
American Chain & Cable Co. ..... II Cover
*American Roller Bearing Co. 54
*American Sand-Banum Co. 40
*The American Well & Prospecting Co. 25
*Baroid Sales Division
National Lead Co. 51
Wm. M. Barret, Inc. 69
*Brown Oil Tools, Inc. 38
*Cameron Iron Works, Inc. 33
*Cardwell Manufacturing Co. 8
R. A. J. Dawson 69
The Demmer Co. 59
*Durbin-Durco 72
*Emsco Derrick & Equipment Co. 27
*Fluid Packed Pump Co. 29
Ft. Worth Laboratories 69
*Gatke Corp. 56
*Goodyear Tire & Rubber Co. 1
Gulf Engineering Co. 72
Halliburton Oil Well Cementing Co. ..... III Cover
Leland Hammer Co. 72
Houston Laboratories 69
*Hughes Tool Co. ..... IV Cover
Jarecki Manufacturing Co. 19
*The Jeffrey Manufacturing Co. 54
Jones & Laughlin Supply Co. 63
Earle M. Jorgensen Co. 67
*Kerotest Manufacturing Co. 55
*Keuffel & Esser Co. 52
Kidder, Peabody & Co. 62
*Lane-Wells Company 71
*Lufkin Foundry & Machine Co. 45
*Martin-Decker Corp. 72
*McEvoy Co. 39
*Merco Nordstrom Valve Co. ..... I Cover
*Mission Manufacturing Co. 5
Murphy Diesel Co. 57
*National Lead Co. 51
National Tube Co. 42-43
*Oil City Brass Works 72
*Oil Well Supply Co. 3
*Patterson-Ballagh Corp. 35
*Pelican Well Tool & Supply Co. 61
*Pittsburgh Equitable Meter Co. ..... I Cover
Precision Inspection Service 69
*The Ridge Tool Co. 12
*Spang & Co. 64
*Standco Brake Lining Co. 59
Sterling Packing & Gasket Co. 72
Surface Analysis Co. 58
Texaco Development Corp. 4
Texas Electric Steel Casting Co. 23
Texas Pipe & Supply Co. 52
Trading Post (Classified Ads) 68
*Tuboscope 47
*Union Wire Rope Corp. 2
*United States Rubber Co. 10
United States Steel Corp. ..... 3 and 42-43
*Wheeling Machine Products Co. 72
*Wilson Supply Co. 31
*Wisconsin Motor Corp. 62
*Young Engine Corp. 40
Youngstown Sheet & Tube Co. 6

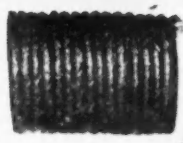
BE SURE TO CHECK THE
Trading Post Section
PAGE 68 OF THIS ISSUE

Forging Ahead For the American Victory

OIL CITY BRASS WORKS
FOUNDERS MANUFACTURERS MACHINISTS
Beaumont, Texas

PAGES 3079 THRU 3098
IN THE 1943-44
COMPOSITE CATALOG

ENGINEERED PACKINGS . . . GASKETS



Style 197
STERLING ASBESTOS "V" PACKING . . .

is composed of woven asbestos cloth, frictioned with a heat resisting compound and molded into a "V" shape. This packing seals without excessive gland pressure. Style 197 is recommended for high temperature services, in steam, water, oil and gases. Style 197 S-Spiral form. Style 197 R-Ring form.

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Sterling Packing & Gasket Co., Inc.
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